See Description of the Plant of the Nineveh Coal Co., page 3

COAL AGE

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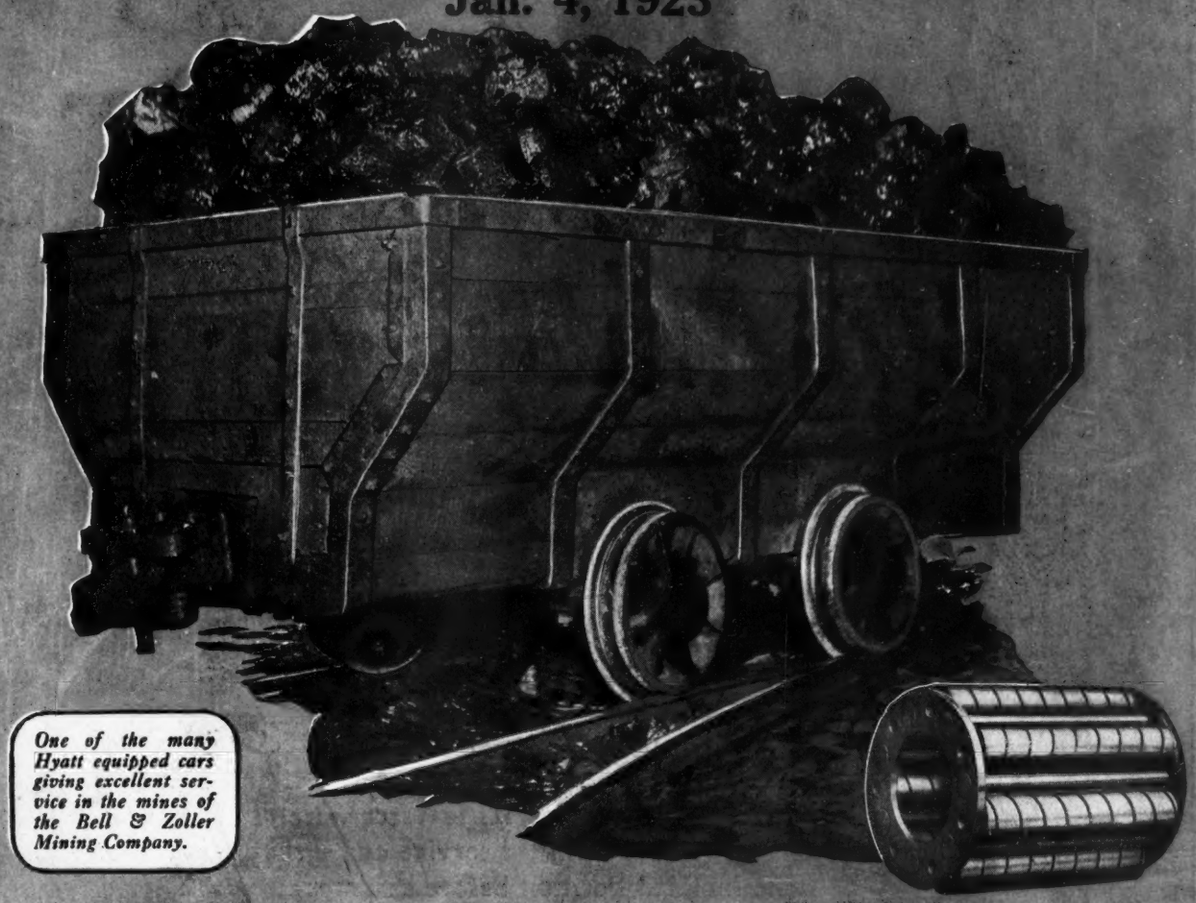
Jan. 4, 1923



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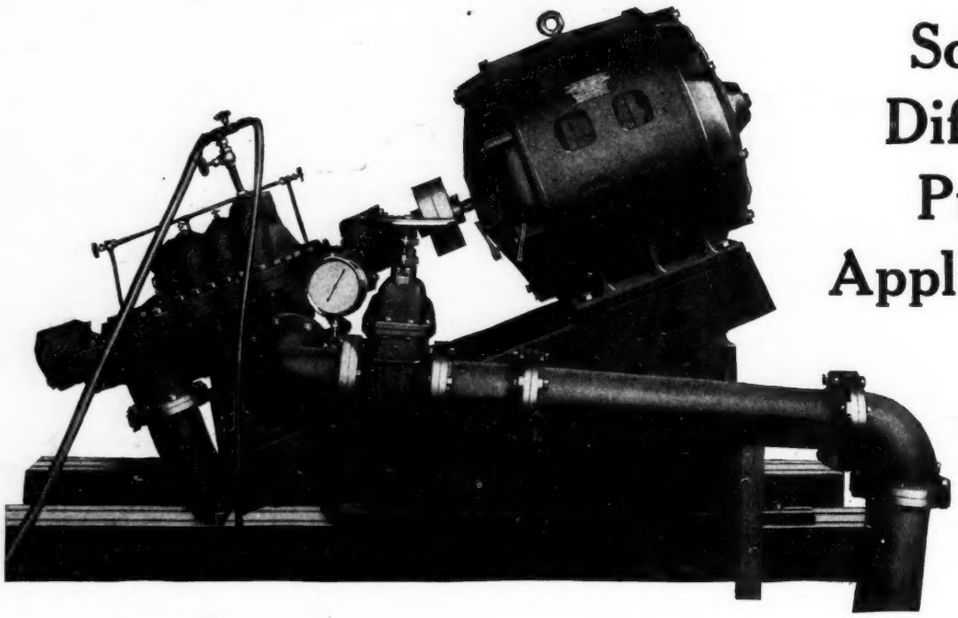

Eight-inch, 3-stage centrifugal pump, direct connected to 200 hp., 1450 r.p.m., 25 cycle, 3 phase, 440 volt squirrel cage induction motor, capacity 1800 g.p.m. against 283-ft. head.

The pumping unit illustrated consists of an Allis-Chalmers multi-stage centrifugal pump and Allis-Chalmers induction motor designed to operate at an inclined position, as it was intended for gradually lowering down a mine slope on a special truck to drain the mine. Special oil-tight combined radial and ball thrust bearings and other special features were used to make it suitable for the intended service and a shop test was run at the inclined position before shipment.

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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 23 NEW YORK, THURSDAY, JANUARY 4, 1923 Number 1

"How to Run Coal"

UNDER this alluring caption the Nationalization Research Committee of the United Mine Workers has issued a booklet of "Suggestions for a plan of public ownership, public control, and democratic management in the coal industry." The report is signed by John Brophy, William Mitch and C. J. Golden. It is not stated who composed the paper, but the inference is that some of the more liberal-minded "intellectuals" who inhabit the country's metropolis lent a helping hand.

This is stated to be a plan on which the mine workers can build sentiment for the nationalization of the coal industry. It is frankly stated that the "term nationalization and the term socialization meant the same thing." The booklet is intended for distribution among the mine workers of the country; it is calculated to arouse their interest in and desire for nationalization of the coal industry. The reader is told that "the prime cause of labor disputes is removed by nationalization in the elimination of the profit motive"; and it is announced that the miners' program is one with that of the railroad workers for the nationalization of the railroads of this country.

Now it will be remarked at once that Mr. Brophy is willing to go much further than Mr. Lewis. Last April, before the Committee on Labor of the House, Mr. Lewis said that the mine workers "believe in the nationalization of the coal mines, to be accomplished in a perfectly legal and proper way . . ." He supplemented this formal prepared statement, when asked by the chairman, Representative Nolan, what he meant by "nationalization," by saying: "That is a matter for determination. It is merely suggested as being a more feasible suggestion than any other. I think that government ownership is an impossibility under present circumstances. The people of the country are not in a position to acquire title to the mining deposits of the country or the developed mining properties. It would constitute a tremendous financial burden on the country." This burden is estimated in the committee report signed by Mr. Brophy as follows: "Four and a half billion dollars for the coal industry and the coal of the United States is a liberal estimate." The *New York Times* comments that this cost is the least of the objections to nationalization.

In other words, "nationalization" of the coal industry is yet a nebulous idea with the United Mine Workers; it is something some of them at least, spurred on by free-thinking "parlor socialists," believe leads them to their Utopia. What do they say will be gained if the government buys from the owners all the coal mines and all the coal lands and lets the workers and others run them? The answer is found perhaps in a list of questions addressed to the mine worker found at the end of the pamphlet. "How much control do you want over your job?"; "Without nationalization, how do you propose to cure slack work?" are some of them. The inference, of course, is that if the properties are taken away from the capitalists who own them, the workers can have full control and can eliminate slack work time.

It is not true that the operators have made no proposal to correct the ills of the coal industry. They have said that if the union will agree to, or be made to acquiesce in, arbitration, national strikes will be thus prevented, the excess development that hangs over the industry will in time be absorbed or eliminated and the industry be permitted to function normally. Neither is it true that this proposal of the miners is thought out and through. In fact they have reasoned backward, saying that nationalization is the panacea for all the troubles of the miner and that it will cure high prices and insure regularity of supply to the consumer, and then they have started to define nationalization and to work out a plan to do those things. They are aping the British miners. They are groping for the pot of gold at the end of the rainbow, the aggregate profits of the industry. The very thinking, the talking and the groping of these men, be they parts of the United Mine Workers or others who are interested theorists, are a part of the milling around of labor the world over, seeking the millennium, trying to solve in their way the great problem of industrial relations.

There is not the slightest possibility that the country will adopt nationalization of the coal industry with any great rush. For those who fear it it is nothing to be afraid of—yet. The answers to most of the arguments and statements in the "How to Run Coal" booklet are obvious, if the reader will think straight. The trouble is that most of those in whose hands the pamphlet will be placed are not trained in straight thinking and are therefore the more likely to be misled. The subject is worthy of the best and most serious thinking of the coal industry. "How to Run Coal" deserves study; it is not lightly to be cast aside.

Mr. Spens Retires

LOOKING back to the activity that preceded and accompanied the passage by the Congress of the act creating the Federal Fuel Distributer, from which position Conrad E. Spens has just retired, and casting up the fruits of his administration of that act leads to the observation that dire predictions oft come to naught and that there is a world of common sense yet to be tapped.

With no real authority, confronted by skepticism from the operators and wholesalers and having but a "we wish you well" from the consumers, Mr. Spens left his work as vice president in charge of traffic of the Burlington railroad and tackled the job of distributing the coal of the country at a fair price. He exceeded all expectations. His tact, his knowledge of human nature and, yes, of politics, and his wholesome

personality put the job over. Those who when he started were the first and the loudest in saying that whatever he did would be unconstitutional and should and would be attacked are now praising him.

It is taking nothing from his glory to say that the strategy controlling his methods was laid down in advance by Mr. Hoover. Mr. Spens carried out the plans; he lined up producer, jobber, railroad and consumer. He obtained that measure of co-operation needed to make the coal industry function in a logical, reasonable manner at a time when all was set for a panic and another price scandal. There has been no more felicitous "control" of the coal industry than that of Conrad E. Spens.

Name Them!

GLIBLY do the newspapers and the men on the street talk about "coal barons." There is but one answer to their aspersion and this is simply: "Please name them." The request never fails to have the desired effect; they are never named. If you talk of lumber barons, the name of Weyerhaeuser, one of the richest men in America, comes readily to the tongue. If the talk drifts to steel barons, up come such names as Carnegie, Schwab, Frick, Hanna and Corey. Of railroad barons none is now left, but nevertheless the names of Harriman, Hill, Huntington, Vanderbilt, Gould and Crocker are not forgotten. Of automobile barons there are Ford, Couzens, Dodge and Willys and many others. The Rockefellers and Doheny head a long list of oil barons. Notable shoe barons are Endicott Johnson and Douglas. Try out the list for banker, dry goods, packing, sugar, copper, journalist, magazine and other barons and you will find that your memory in no way is remiss. But for coal barons you must search the directory, and most of those that will be named will not be barons in their own right but by virtue of the aggregations of other people's capital which they are investing and managing. There are no real coal barons.

But surely coal is a source of much profit. Anyone around the bituminous coal regions can tell you of men, little removed from penury, who in a few months have become among the more wealthy of the people in the small communities in which they live. And with this reflection it must then be borne home forcibly on those who really think the subject through that in the coal industry it is not true that the "first million dollars are the hardest." Exceptions perhaps are those who make profit on royalties and the buying and selling of coal lands, and even they do not become really wealthy as measurements of wealth are made in other industries. In the actual operation of coal mines the start is far easier than the finish.

The small operator who opens his property just when coal becomes scarce is the man who makes the profits. His investment is small, his coal is near at hand and spot prices are high. He is likely to become rapidly well-to-do.

His big neighbor finds himself loaded down with contracts taken at a low figure. He has estimated his power to fill orders on the basis not of his probable car supply but of his mine capacity. When coal becomes scarce his rivals multiply and they share his cars. He might get enough to have a little coal to sell on the spot market if cars came as regularly as they did when orders were few, but they do not. Meantime his customers are coming forward for the maximum tonnage contemplated in their contracts.

He finds his men ready to strike, unwilling to work steadily, and still more ready to drift away from him. His smaller rivals will pay any wages. They are in business only for the nonce. They do not fear the after-effects of excessive liberality and they have no contracts. They can pay any wage necessary, for the spot price warrants it. Without enough men, with insufficient cars, loaded to the guards with low-priced contracts, he passes through the time of plethora without any great profit and as he has a large investment, a heavy debt, much expense for upkeep and taxes on a large land-acreage, he must continue to work his mine in the gray, uncertain light of the morning after. Truly the second million dollars come the hardest.

But wait! We do recall a coal baron, the late Francis S. Peabody, of Illinois. While he lived he was always a capitalist and not a mere servant of some large corporation. When he died he was found to be worth $2,500,000. Everybody must have been surprised that this man, the leading figure among Middle Western coal owners, was worth so little. Men who have cut a much narrower swath than he have been worth many times as much. Yet as a coal baron, in point of wealth, he took a high place.

Let us compare his wealth with that of the Ford Motor Co. This giant aggregation started from nothing in 1903. To that, little but profits were added, and see what the record shows. The capitalization soon rose to $2,000,000. In September, 1910, Ford declared a dividend of 100 per cent cash; in June, 1913, of 500 per cent cash, and in 1914 of 100 per cent. In 1915 the dividend paid was not reported, but in 1916 it was 60 per cent and in 1919 the dividend was 200 per cent. In that same year as a result of the suit of the Dodge Bros. against the Ford Motor Co. that corporation had to pay out a further dividend of $19,276,385.

With all these dividends the Ford Motor Co.'s total assets at last reports were $409,820,152; its surplus was $289,935,296; its cash and debts receivable totaled $148,615,334.

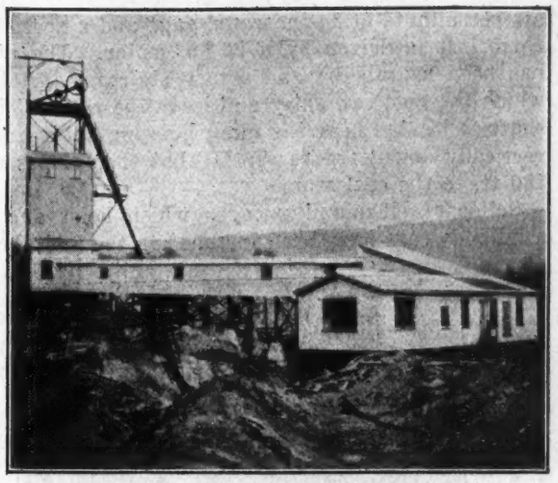
On one act of candor the public may be congratulated—and it is a fact that shows that the people know the truth but have not as yet grouped what is known in detail into a broad generalization—and that is that you almost never hear of "coal kings." There are oil kings, steel kings, sugar kings and kings of finance but a barony is the highest title which a coal man ever receives from the grateful (?) public. The people with all their irritation know well that no coal man ever arrives at great wealth. If the press knew of a coal king it would not overlook him. The only person who ever got that title in the American press was a Welshman, Baron Rhondda, and whether he was really entitled to the distinction is a question.

CONSIDERATION OF THE AMENDMENTS to the Coal Commission Act by the Interstate and Foreign Commerce Committee of the House of Representatives was scheduled to begin during the week of Jan. 1. No opposition to the amendments is expected and prompt enactment is predicted.

AS THE RANKING MEMBER of the Interstate Commerce Commission, B. H. Meyer will act as chairman of the Commission during 1923. The chairmanship rotates among the members from year to year in order of seniority of service.

Remodeled Valley No. 2 Operation of the Nineveh Coal Co.

By Charles N. Martin*
Seward, Pa.



Double Rooms Reduce Labor of Coal Loading—Solid-End Cars Used with Self-Dumping Cages Having Revolving Cradle—Improved Hoisting Cycle Saves Time and Lowers Power Consumption

DEVELOPED to serve a 40,000-kw. plant of the Penn Public Service Corporation on the bank of the Conemaugh River just on the outskirts of Seward Borough, Westmoreland County, Pennsylvania, the remodeled mine of the Nineveh Coal Co. exhibits well what can be done to adjust an old and inefficient mine to present-day needs. The power plant, which serves this field and the mining districts of adjoining counties, has been in operation about one year.

The mine is located on the main line of the Pennsylvania R.R. not far from the common meeting point of Indiana, Westmoreland and Cambria counties, in a large coal field which is practically undeveloped.

The seam of coal being worked by the Nineveh Coal Co. is the "B," or "Miller," bed, which in this field has an average thickness of 44 in. The bed is opened by a shaft at a point where the coal is 135 ft. below the surface. The former system of working the mine was by single-neck rooms each having a pillar which was drawn from one road only. This was not producing results in proportion to the energy that the miners expended. The management of the Nineveh Coal Co. conceived the idea that two-neck rooms with each pillar drawn from two roads would be more efficient and would prove more economical in the cutting and loading of the coal. The increased output per miner that resulted and the greater satisfaction of the miners, which is the outcome of the better earnings arising therefrom, have proved the wisdom of making this change in method.

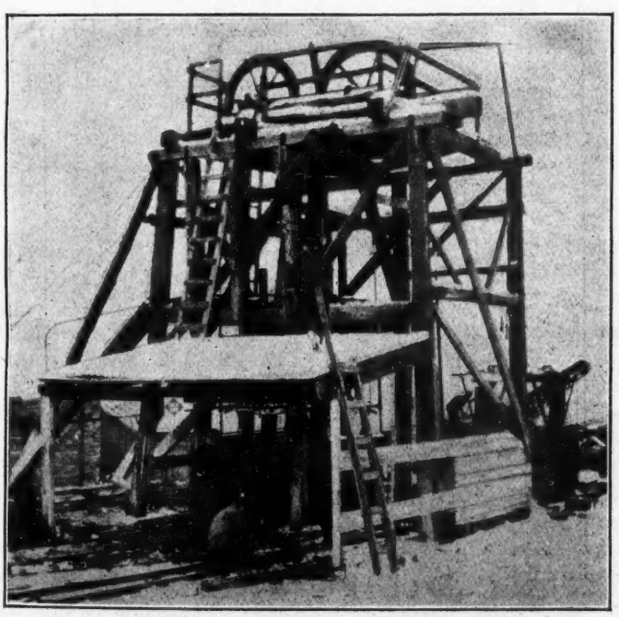


FIG. 1—OLD NINEVEH HEADFRAME NOW REPLACED

The Nineveh coal field, like many another below water level in central Pennsylvania, was long overlooked and in this case the pioneering efforts were not on any elaborate scale but they served to exhibit the value of the area they uncovered.

*Superintendent, Valley No. 2 Mine.

The coal is undercut by shortwall mining machines with 6-ft. cutter bars, the coal being blasted by permissible explosives fired by electric detonators. Thus breakage is reduced to a minimum and the miners are afforded maximum safety. All main roads are equipped with 40-lb. rails and the coal is hauled over them by electric locomotives.

Cars Are Wide and Low, Having Solid Ends

Composite steel-and-wood solid-end cars are used instead of the old-style equipment. The maximum height of these cars above the rail is 28 in. They have a capacity of 1½ tons. Cars of this type are well fitted to the requirements of this seam as with them and with steel ties in the rooms it is unnecessary to lift bottom in the working places. The miner has about 12 in. of height above the car in which to load his coal. This could not be obtained without some such arrangement.

The rooms are driven sufficiently off the strike and up the pitch to make the gradient 1 per cent in favor of the load, thus rendering it easy to move the cars into and out of the rooms. The maximum grades on entries are about 5 per cent in favor of the loads, a grade on which large trips readily can be transported. These grades also afford good drainage gradients to one central point where three horizontal-split double-suction single-stage centrifugal pumps have been installed, each having a capacity of 750 gallons per minute.

A new 8-ft. straight-flow fan has been installed on the old airshaft. It has a capacity of 50,000 cu.ft. of

air per minute at 1¼-in. water gage and a speed of 250 r.p.m. It is driven by a 20-hp. motor. The airshaft has been retimbered and a new staircase installed by which the men can enter and leave the mine. The airshaft is located near the main hoisting shaft and runs vertically downward for 75 ft., but then slopes off for 130 ft. to the coal seam.

Solidcar self-dumping cages which hoist and dump solid-body cars have been installed in the main hoisting

FIG. 2—CAGE AND HEADFRAME

Note the hopper below the cage into which the car dumps as it approaches and reaches the upper landing. By the opening of the gate of the hopper the coal is discharged gently into the weigh basket in the tipple. This shows the cage at a point below the dumping position.

shaft by the Car-Dumper & Equipment Co., of Chicago, Ill. The many obvious advantages of the solid-body car have been well known to operators of shaft mines for some time, but until the development of the Solidcar self-dumping cage the only shaft mines that had been able to avail themselves of the advantages of this type of car were those which were large enough to use skip hoists with a rotary car dumper at the shaft bottom. The management of the Nineveh Coal Co. felt that with a solid-body car they would have a lower first cost, a stronger car, lower car maintenance and less road-cleaning expense.

The self-dumping cage overturns the car slowly and easily, the overturning commencing some distance below the final dumping point, and as a result the coal is discharged from the car with so short a fall and so light a shock that the coal in dumping, for all practical purposes, is not broken or degraded. As the car is rotated around its center of gravity little power is required for dumping, and as none of the weight of the empty car or cage is taken off the rope at the head of the shaft the peak load on the hoist is considerably reduced.

Entering the cage at the bottom of the shaft the car is engaged by keepers and rests on a cradle which is mounted inside a hopper, to which the bail and hoisting rope are attached and which has a hinged discharge gate at the lower end. This cradle is built in the form of a hoisting platform, making the cage suitable for hoisting cars, men or material.

The cradle is pivoted on heavy trunnion shafts which pass through the hopper at each side and which have the dumping arms and rollers fastened to their outside ends. This rotating cradle is pivoted at a point which is a little to one side of the center of gravity of the loaded car in the cradle, making it easy to overturn at the head of the shaft. During hoisting the cradle is locked in the horizontal position. The hinged chute at the bottom of the cage also is locked in the closed position by direct connection to the overturning arms.

As the cage approaches the dumping point the guides unlock both the gate and the cradle in which the car stands, and the rollers on the overturning arms under the main dumping guides turn the cradle over in an easy rotation until the car finally reaches the overturned position at the end of a 135-deg. rotation.

It is because the hopper is under the car to receive the coal that the dumping guide can be made so long and with such an easy curvature as to give an overturning movement that is gradual and smooth. This arrangement eliminates any excessive strain or jar in the dumping operation and spills the coal out of the car into the hopper slowly. Breakage is prevented by a dumping shield, so placed that the larger lumps of coal cannot fall into the hopper until a bed of slack has formed.

After the gate is unlocked by the overturning action of the cradle it is held closed by the action of the

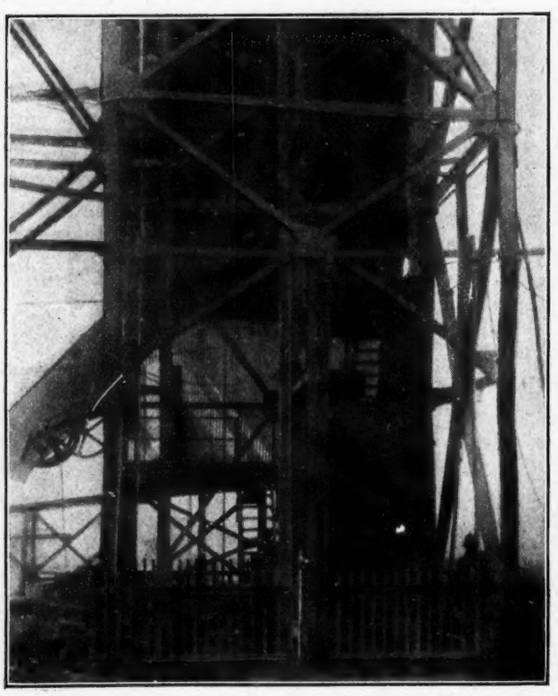


FIG. 3—CHUTE FOR LOCAL COAL; CAGE ON RIGHT

A loaded car is ascending in the cage and thus far has not reached the point of overturning. The chute for local coal can be opened and shut from the ground.

dumping rails at the side of the shaft until it reaches the dumping point. The coal discharged into the hopper is held back by the gate until the dumping point is reached. Here mechanical devices allow the gate to open. At this instant the car has become divested of all its coal and the whole load in the hopper immediately flows across the open gate to the weigh hopper in one continuous sliding motion without any vertical fall whatever.

When the cage stands in the dumping position the entire weight of the cage and car is kept on the rope, giving a maximum counterbalance to assist in starting the next loaded cage from the bottom of the shaft. This

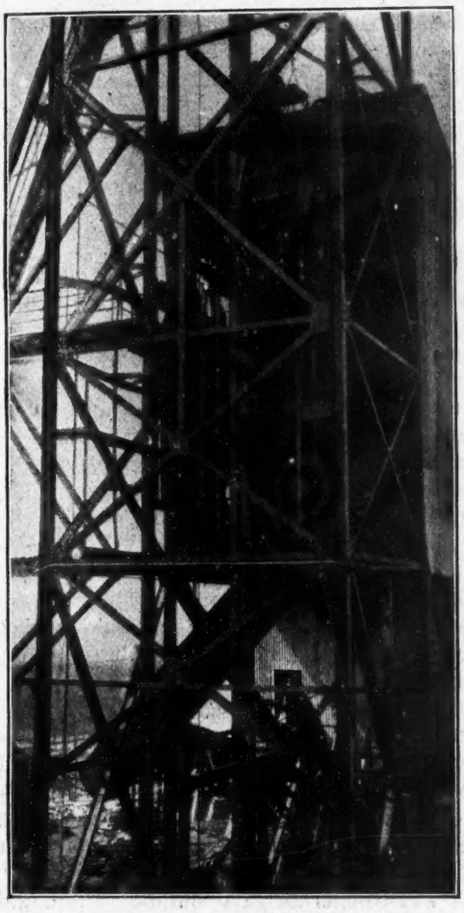


FIG. 4—HEADFRAME WITH CRADLE DUMPING

The cradle is standing perpendicular, the cage having arrived almost at the end of the dumping cycle. The chute for local coal sales also can be seen on the left of the illustration.

feature materially reduces the maximum peak load on the hoist, allowing the use of a smaller engine.

These cages are not operated with a slack rope. The dumping guides are so gradual that the hoisting engineer brings the cages into the guides at a fairly high speed and then throws on the brake, retarding the movement uniformly, until the cage finally comes to rest with the car in the overturned position. The loaded car is fully discharged by the time the empty car in the other compartment reaches the landing at the shaft bottom. This results in a smooth hoisting cycle, for it is not necessary for the engineer to bring the engine to a stop before going into the dump. It also shortens the hoisting cycle, for the car is dumped at a fairly high speed.

Another feature of these cages which tends to increase capacity is the positive and regular discharge

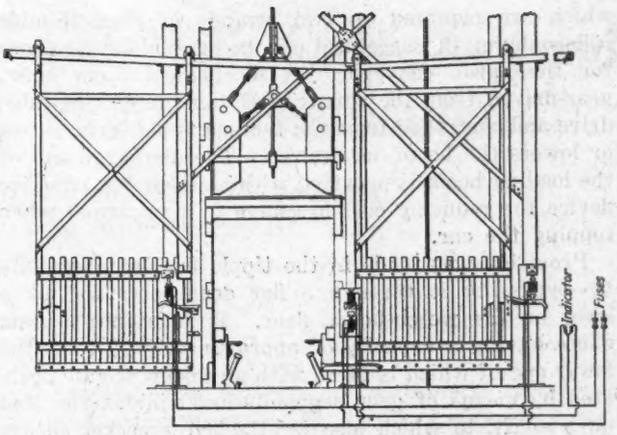


FIG. 5—CAGE GATES AT SURFACE LANDING

The gate can be opened only when the cage is at the landing and not then unless the emergency brake also is applied. The gate will remain open until the emergency brake is released; then it will close and lock.

at the dumping point without any chance of failure or any possibility of missing the dump. The dumping is progressive and positive, being performed by guides, and does not depend upon the engagement of a crane as with an endgate car.

A double reduction hoist equipped with automatic overwind, overspeed and emergency stop devices, driven by a 75-hp. alternating-current motor, raises and lowers the cages.

The new tipple was designed by C. E. Cowan, of Greensburg, Pa., the consulting engineer of the company, assisted by V. R. Velander, chief engineer for the Marion Machine Foundry & Supply Co., of Scottdale, Pa., which furnished the steel work and equipment. The tipple is of steel and is covered with corrugated galvanized iron. Liberal window surface and skylights have been provided to light all places where men have to work.

Coal Weighed in Basket After It Is Dumped

The coal passes from the cages over a dump chute to the weigh basket, where it is weighed by dial and beam scales, the weights being tabulated. When a counterweighted brake on the weigh-basket mechanism is released, the coal by its weight opens the door on the bottom of the basket, allowing the coal to pass to a receiving chute connected to the reciprocating feeder, where it is fed uniformly onto the apron conveyor. This conveyor is made up of ¼-in. steel-plate double-beaded flights 3 ft. long. These are mounted on steel thimble roller chain.

The rollers have cored oil cellars and are provided with wiching ring and push-plug oilers, making them self-lubricating. The coal is carried about 90 ft. on this conveyor, whereupon it passes to a chute discharging onto the shaker screen. Only one shaker is installed, the screen being of the double-deck type with a collecting hopper.

The lump and slack are separated in passing over the screen and are loaded onto the picking table through a specially designed discharge nose. The collecting hopper is provided with rack-and-pinion roller slide gate, which permits of full or partial opening, so that either any part of the slack can be loaded as desired or the slack can be passed over a discharge chute for loading on the slack track.

The picking table and loading boom unit is made up of ¼-in. steel plate single-beaded flights 5 ft. long

which are mounted on two strands of steel thimble roller chain, the specifications being similar to those for the apron conveyor. A mechanical boom hoist, gear-driven from the countershaft on the picking-table drive and controlled from the trimmer's platform, raises or lowers the boom, as desired. The discharge end of the loading boom is provided with a simple but effective device for reducing coal breakage to a minimum when topping the car.

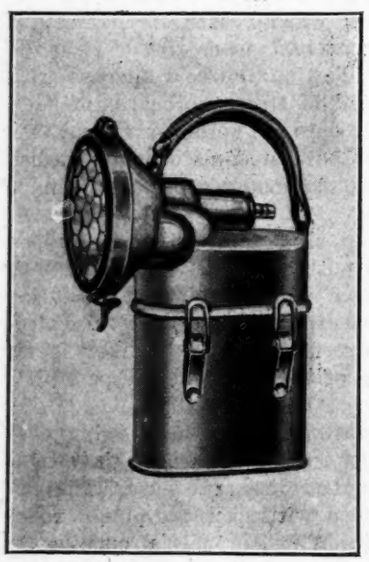
Provision was made in the tipple for dumping slate by bypassing it through a flat door controlled by a lever on the weigh-house floor. It falls into a slate chute having a capacity of approximately 10 tons, the lower end of which is fitted with an undercut gate operated by means of gear segments and pinions mounted on a shaft, to which also is attached a pocket sheave wheel. This sheave wheel is operated by a chain of sufficient length that the undercut gate can be opened or closed from the ground level. The new equipment has a maximum capacity of 250 tons per hour.

A Lamp Suitable for Use in Coal Mines Which Burns Without Attention

IN TRAVELING around mines need often is felt for a lamp that will burn brightly and without mess or need of attention, one also that can be stood up without difficulty on the top of a loaded car or in some other more or less uneven place so as to give a ready light for writing or note taking.

Such a lamp is the Excellight, manufactured by the National Marine Lamp Co., at Forestville, Conn. It is a portable lantern the current for which is generated by two No. 6 dry cells contained in an aluminum casing. It has an adjustable focus that permits either a spread of light or a concentrated ray to be thrown. A push-button switch is conveniently arranged so that it can be instantly manipulated by the finger and thumb of the hand carrying the lantern.

No arrangement is provided for the extinguishment of the filament should the glass in front of the electric light be broken by a blow or fall or if the bulb itself also should become broken. It is not therefore a fool-proof lamp or even an accident-proof lamp in gas in such a degree as are the lamps approved by the U. S. Bureau of Mines. The glass, however, in front of the lamp is ⅜ in. thick and reinforced with wire. Such a lamp would be well suited for use around powder houses and stables above, and perhaps below ground, though underground as a rule permanent lighting is provided. It would serve well also for the men employed on hay and powder cars, especially when special and covered wagons are not used. For firebosses, who need to come out to places of perfect safety when their flame safety lamps are accidentally extinguished, the type of lamp which will fit the pocket is preferable. It would be better still, of course, in every case to give firebosses, whose open lights may be extinguished, a lamp of the type approved by the U. S. Bureau of Mines.



ELECTRIC LAMP FOR NON-GASEOUS MINES

The lamp has two dry cells and an aluminum casing. The glass in front of the lamp is thick and reinforced by wire.

Mechanical Engineers Adopt a Decalogue

ADOPTION of a code of ethics, governing its membership of approximately 20,000, is announced by the American Society of Mechanical Engineers. Ultimately, it is expected, this code, prepared by a joint committee of the national engineering societies, will apply to the entire engineering profession, embracing more than 200,000 professional engineers. It runs as follows:

1. The engineer will carry on his professional work in a spirit of fairness to employees and contractors, fidelity to clients and employers, loyalty to his country and devotion to high ideals of courtesy and personal honor.

2. He will refrain from associating himself with or allowing the use of his name by an enterprise of questionable character.

3. He will advertise only in a dignified manner, being careful to avoid misleading statements.

4. He will regard as confidential any information obtained by him as to the business affairs and technical methods or processes of a client or employer.

5. He will inform a client or employer of any business connections, interest or affiliations which might influence his judgment or impair the disinterested quality of his services.

6. He will refrain from using any improper or questionable methods of soliciting professional work and will decline to pay or to accept commissions for securing such work.

7. He will accept compensation, financial or otherwise, for a particular service, from one source only, except with the full knowledge and consent of all interested parties.

8. He will not use unfair means to win professional advancement or to injure the chances of another engineer to secure and hold employment.

9. He will co-operate in upbuilding the engineering profession by exchanging general information and experience with his fellow engineers and students of engineering and also by contributing to work of engineering societies, schools of applied science and the technical press.

10. He will interest himself in the public welfare, in behalf of which he will be ready to apply his special knowledge, skill and training for the use and benefit of mankind.

The code was drawn up by a joint committee including representatives of the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Society of Heating and Ventilating Engineers. Only the mechanical engineers have ratified it as yet, possibly because the others have not had a meeting at which the matter could be introduced. The representatives of the mining engineers are J. Parke Channing and Philip W. Henry, of New York.

Longwall Retreat with Face and Main Conveyors and Many Air Splits Giving Positive Ventilation

With This Arrangement a Single Panel May Be Made a Source of Production for a Sizeable Mine—Separate Well-Directed Split Ventilates Every Four Hundred Feet of Face

BY F. C. CORNET*
New York City

RAPIDITY in extraction enables the coal operator to realize rapidly on the capital invested not only in the coal itself but also in the preparatory and development work by which this coal is made recoverable with profit. It is with this idea in view that the plans here presented have been formulated. They provide for the recovery of all the coal and for an increase in tonnage that can be recovered during a given time with a given expenditure on equipment.

Referring to Fig. 1, which shows one way of applying this method, lateral headings (designated in this case as Second Right and Third Right) are driven 504 ft. apart center to center, each heading having its air course on the lower side in the usual manner. Rooms 20 ft. wide and 400 ft. long are driven to the rise with a 200-ft. solid pillar between them. From the face of each such room a crosscut 20 ft. wide is driven to the next room, the alignment of these crosscuts leaving a continuous pillar 30 ft. wide to protect the air course of the lateral heading immediately above.

The lower rib of each of these crosscuts forms a longwall face 200 ft. long, along which a face conveyor is laid. These faces operate in pairs or sections. The conveyors of a section run toward each other so as to discharge onto a third conveyor installed in every other room, beginning with No. 2.

I have designated these rooms as "conveyor rooms" and the conveyors in them as "stationary conveyors," the latter being so named because they stay there until all coal in both adjacent pillars has been mined to within a distance from the heading varying from 50 to 100 ft. or even more, to suit the needs of the operation. As the faces advance toward the heading the stationary conveyors are shortened at their far end.

*Consulting engineer.

STATIONARY ROOM CONVEYOR SUNK IN A DITCH

Though the face conveyors, which must be easy to move as the faces advance, will be of a light pattern, the stationary conveyors, in order to reduce their chances of getting out of order, may be of heavier construction. Though the face conveyors are laid on the pavement of the seam (which seam is in this case 36 in. thick) the stationary conveyors are laid in a narrow ditch cut in the bottom. Consequently cars and locomotives can pass over the conveyors when the rooms are being driven. In the instance shown in the various illustrations a total headroom of 54 in. having been found necessary for haulage, the depth of cut in the rooms is 18 in. This provides enough fall from the face conveyors to those that are stationary to permit the former to deliver coal very nicely to the latter. Toward its lower end, beginning a short distance from the heading, the stationary conveyor is bent upward, as shown in Fig. 2, for the purpose of elevating its head enough

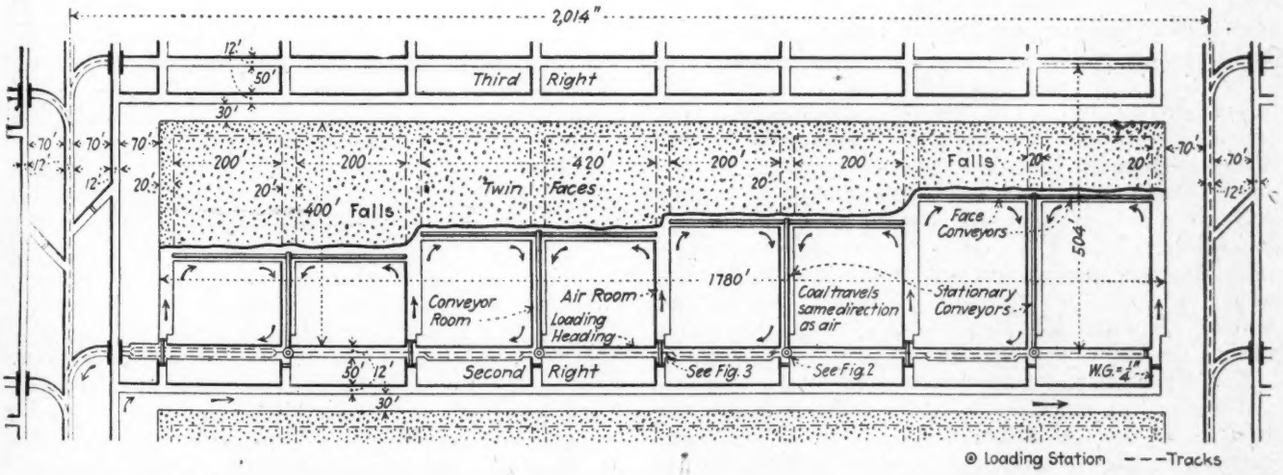


FIG. 1—LONGWALL RETREATING METHOD WITH MAXIMUM CONCENTRATION OF WORKING FORCES BUT WITH AIR SO SPLIT AS NOT TO RESTRICT THE NUMBER OF MEN ALLOWABLE BY LAW AND GOOD PRACTICE

By means of a pipe overcast the air is taken from the intake airway into the air room, up which it passes. At the longwall face it splits, runs past the two faces, returning by two conveyor rooms. The main difficulty from a legal standpoint would consist not so much in carrying out these plans after the workings had been developed to the stage indicated but in developing the work to that stage, for the conveyor and air rooms would have to be driven 400 ft. beyond any of the air passages provided. This could be done only by providing pipe ventilation for these rooms while driving them and the crosscuts between them. The distance might be greatly shortened, if grades permitted, by driving the rooms to meet from adjacent headings, making the distance from the adjacent airway at no point more than 200 ft. If the coal is thin and bottom is not lifted the air rooms could not be driven without specially low cars or conveyors being provided. Special cars might not be objectionable, as they might be already on hand and as they would be used exclusively in the development of new headings, making full trips of special cars feasible. All coal from the longwall faces is loaded at the heading with the cars at right angles to the conveyor.

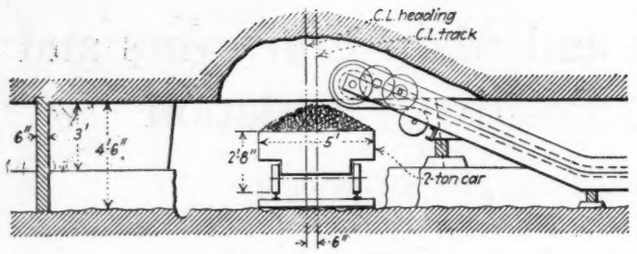


FIG. 2—ROOM CONVEYOR DELIVERING COAL TO CAR

As the car does not have to enter the room it can be made of almost any capacity desired. A lodging must be made for it in the roof, but as the frequency of this provision is only once in every 400 ft., that will involve little rockwork. The conveyor is sunk in a ditch in the room roadway so that the face conveyors can deliver the coal to it without elevation.

above the rail so that cars can be loaded well above their brim. This is called a "loading station."

The mine being in 36-in. coal, a lodging must be made in the roof, as shown, to permit this elevation. As the conveyor needs but little space and as the loading stations are 400 ft. apart, it is fair to say that, considering the large tonnage every station will be required to load, the slate work needed for this purpose will be insignificant. Were the cars, as is often the case, to be taken into what are here called conveyor rooms and placed under the face conveyors for lodging, a hundred times as much material would have to be handled. In the one case a large quantity of bottom would need lifting and in the other a little roof would be removed from the few and widely spaced loading stations.

Trackage and Gathering Cost Reduced

It is obvious also that this way of loading the cars on the heading itself not only reduces the trackage to a minimum but also favors expedition in loading operations. It will be noted that a three-track main siding is provided at the entrance to the heading and that secondary side tracks are constructed handy to each loading station, but nothing prevents making the loading facilities still greater by double tracking the heading completely above the three-track main siding. If this were done the heading would have to be made at least 17 ft. wide, which would take the place out of the yardage-paying class, leaving only the air course and its crosscuts to be driven narrow.

By looking at Fig. 1 it will be seen that the different sections are not in line with one another. The further a section is from the main heading, the further it also is from the lateral, or loading, heading. This is due to the fact that the work was started advancing. Any given pair of faces was started ahead of the pair immediately beyond it. Had the work been started retreating, the section furthest from the main heading would be closest to the loading heading, the distance between the latter and the different sections increasing toward the main heading.

For supervision, for ventilation and in order to permit the cutting machines to pass rapidly from one section to another, a communication way is kept open between successive sections. In order to minimize the expense of maintaining such communication, it is advisable to straighten the general face line as much as the working of the roof will permit. In general, if the work is in good hands, it will be found that the manner in which the roof works does not prevent keeping the face line practically straight if desired; indeed, the straight face has so much to commend it that most persons would prefer it. The kind of roof that permits this is often also the kind that will permit of keeping open a 50-ft. communication between sections as easily as one two yards or so in length.

The heading pillars can also be removed by similar methods. By heading pillars are meant here the protective, unbroken strip of coal left on the lower side of the air course, the pillars between air course and heading and those portions, 200 ft. long, of the large interroom pillars that will not be recovered through the conveyor rooms in the manner that has been described.

Referring more especially to Fig. 5, it will be seen that in the instance illustrated the widths of these pillars are, in the order named, 30 ft. for the first and 50 ft. for each of the other two. Figs. 5 and 6 show that the system adopted for removing these pillars is much the same as that previously described. Two face conveyors, running toward each other, discharge onto a stationary conveyor carrying the coal to a loading station where it dumps it into the cars.

The only noticeable difference between this and the loading stations described above is that in the present case the cars come to and depart from the loading station in a direction parallel, instead of at right angles, with the stationary conveyor. Above the loading station there is a tail track capable of accommodating as many empties as the gathering locomotives are able to handle at one time.

It is easy to see how loading facilities could be further improved by extending a little distance outwardly, and in a straight line, the tail track, joining it by a switch at its lower end with the main, or loading, track. This would permit shoving a trip of empties up the tail track without having to maneuver the trip of loads formed on the main track.

This would, of course, necessitate more rib slabbing than the drawing shows, but such liberty usually can be freely taken at this late stage of operations, even if the roof has been weakened as a result of close, intensive mining. If slabbing increases in slight degree the trouble of keeping the track clean, it will not be for long. It will be found good practice to move the position of the loading station outward on the heading about 350 ft. at a time—that is, every time the stationary conveyor will have been made 350 ft. shorter in the rear.

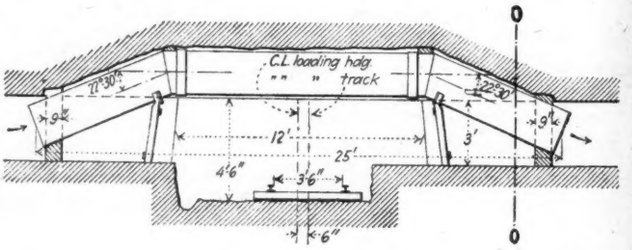


FIG. 3—AIR BRIDGE OVER MAIN ROADWAY

The air to be taken by this bridge is intended to clear only 400 ft. of face from noxious gases. Enough air is supplied to provide ventilation for forty men. Concrete stoppings are provided at both ends of the air bridge, the pipe passing through both of them.

As there comes a time in the operations when all that remains to sustain the output of the heading is the coal tributary to the set of conveyors in the heading pillars, it is important to plan the work in advance so that this set will load enough coal daily to its last day to keep at least one gathering locomotive occupied to capacity every minute of operation.

This will keep down nearly all the items of cost.

especially haulage, supervision and loading-station work. In order to do this it may be advisable to make the barrier pillar below the air course wider than 30 ft. and leave more than a width of 50 ft. above the heading to be mined when drawing heading pillars. Fig. 5 shows 130 ft. of actual coal face to be mined at such a time.

If, without changing the width of the middle pillar, the other two are so widened that the actual coal face will be 200 ft. instead of 130 ft. the daily output will be increased in the proportion of 130 to 200, that is, more than 50 per cent. This will go a long way toward reducing the idle moments of the locomotive, its crew and the men employed around the loading station.

The rooms of odd number, beginning with No. 1, have been designated as "air rooms" because they are used to convey air to the working faces. This air comes direct from the air course through a sort of semi-permanent overcast made of a galvanized-iron pipe of 24 in. diameter placed overhead across the loading heading.

Figs. 3 and 4 show how this pipe, lodged in a narrow cut shot out of the roof, does not interfere with circulation on the heading. Although light and inexpensive, this kind of overcast is most efficient. The pipe can be used over and over again anywhere in the mine.

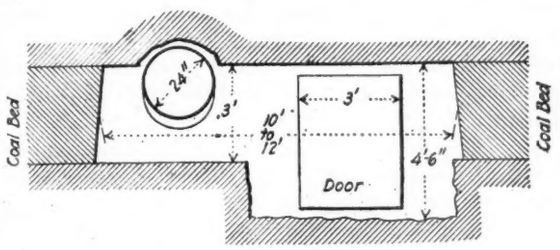


FIG. 4—DOOR AND CROSS-SECTION OF PIPE

The 3-ft. door is intended for use when taking a cutting machine to the shop whenever it is in need of important repairs. Ordinarily the men travel by way of the conveyor rooms but the door might be used by them in case of an emergency. It must be placed far enough back so that the machine can be turned into the main roadway without fouling.

Both ends of it are tightly encased in stoppings, preferably made of concrete, as shown.

In the upper stopping a door is provided, as shown in Fig. 4, through which the cutting machine may be taken in or out, as is found necessary. It is through this door also that the men will find an additional way of escape in case of emergency. It is not likely that the men would use this door ordinarily. They would prefer to travel by way of the conveyor rooms, where there is ample walking space alongside the conveyor, the latter being laid in a cut.

Under the small water gage of 0.25 in., the pipe overcasts, which are only 25 ft. long, are able to deliver not less than 8,000 cu.ft. of air per minute. This air traveling up the air room, splits at the head of it. One-half goes to the left, the other to the right, each split seeking the nearest conveyor room on its side, ventilating on the way one of the two faces of a section whose other face is ventilated symmetrically, that is, from the opposite side and direction, by a split of air coming from the next air room.

The two splits thus ventilating a pair of faces meet at the head of the conveyor room, go down it and return together direct to the outside. This is shown in detail in Fig. 1. By looking at the latter it is seen also that the first and last air rooms must furnish air to only one face each. Hence they will have to carry only

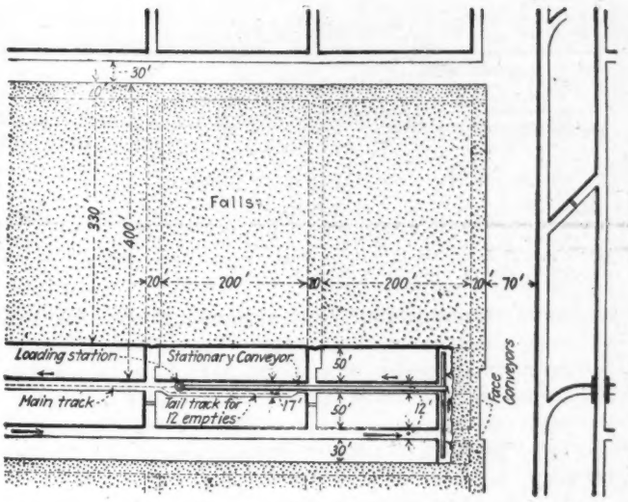


FIG. 5—WORKING OUT THE HEADING PILLARS

In this, as in the rooms, longwall retreating methods with face conveyors are used. In this instance, however, if the coal is thin, the main conveyor can be placed without excavation on a level below that of the bottom of the coal seam. All the side tracks and provisions for the delivery of air are already made, having been constructed for extracting the coal between the rooms.

50 per cent of the volume all other air rooms must carry. This is a matter easily regulated.

In the case of the last air room there is no pipe overcast, as none is necessary there. By building a stopping across the heading above the end of the track, and putting an ordinary regulator in the last crosscut, as shown, the volume of air running up the last air room will be regulated as desired.

In the example shown, Fig. 1, assuming that 4,000 cu.ft. a minute pass up each extreme air room and 8,000 cu.ft. up every one of the other three air rooms, the total volume is 32,000 cu.ft. per minute. This is at the rate of 4,000 cu.ft. for every single face. Figuring at 200 cu.ft. per minute per man, 160 miners may be put to work in the workings shown, or at the rate of 20 men per single face.

In other methods, including the room-and-pillar, the air intended to ventilate the workings off a lateral heading is let out of the air course in a single body through the last crosscut. No matter how large may be the volume thus allotted to the workings, the whole of it counts as one split only and the maximum number of men who may work in it is fixed by law. In West Virginia, for example, it is 60 men.

If only that number of men were put to work in such workings as are shown in Fig. 1, an average of only 7.5 men would be employed on a single face. If it takes 20 men one 8-hour shift to load out a cut and do all work necessary to make the face ready again for another operation of the cutting machine, it must take 7.5 men 2.66 shifts to do the same. In the former case six cuts a week are obtainable from a face. In the latter case it is not probable that any face would average more than two cuts a week.

This method retains all these advantages due to special ventilation no matter how many working sections there may be off a single working heading. Fig. 1 shows only four sections, but a dozen might as well have been shown. So long as the air course can deliver the air necessary, there is no limit to the number of sections nor to the number of miners who may be lawfully employed off a single working heading.

As many men are centralized and efficiently employed in the single second right heading of Fig. 1 as are

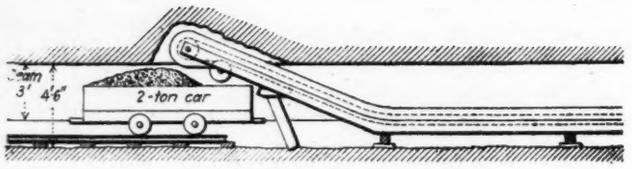


FIG. 6—LOADING COAL FROM HEADING INTO CAR

The conveyor can be moved forward—or should it not be rather backward?—350 ft. at a time. The expense for creating the necessary headroom accordingly is not large. The car is loaded from the end, which is not as desirable as from the side as far as continuity of operation is concerned.

ordinarily found in half a dozen headings scattered over an immense area in the average bituminous-coal mine.

The method presented is characterized by the following advantages, several of which are found in no other method:

(1) Minimum of narrow work per acre of coal operated.

(2) Working faces in every instance ventilated by fresh air brought direct from the outside in any volume desired so that no air that has passed along any working face will pass along any other on its way to the outside.

(3) Cutting machines invariably find within easy reach all the work they are capable of doing, making it unnecessary for them to waste precious time moving from place to place.

(4) Minimum of track work needed.

(5) Reduction in haulage cost due to the location, layout and equipment of the so-called "loading stations" where the cars drop continuously to loading position, to drop away in like manner after loading, being then made up instantaneously into trips. The gathering locomotives move the empties and loads only in trips as heavy as they can handle safely and economically. The locomotives are not only kept moving all the time but never move without being loaded to capacity. The cars also are kept in constant motion and consequently a minimum number of cars and locomotives will permit the mining of a maximum tonnage in a given time.

(6) Ways of approach to the working faces, whether intended for ventilation, the handling of coal and supplies or the going and coming of the men, are everywhere in the solid and at all times the men will find several roads to safety.

(7) Pack walls are not needed and no labor need be performed back of the faces except the necessary timbering and whatever salvaging of timber may be deemed advisable and judged safely practicable.

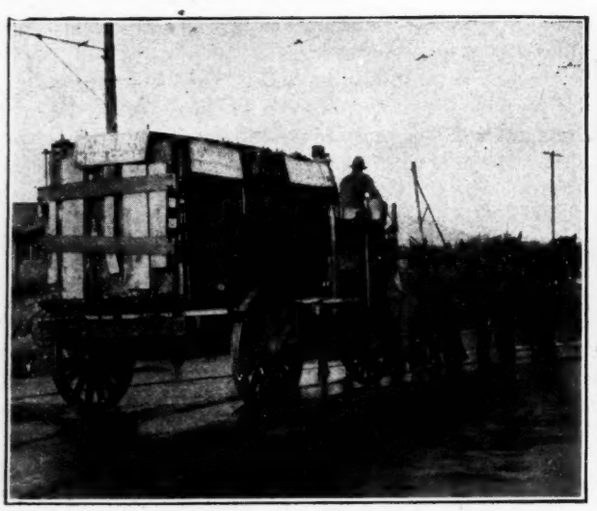
(8) Muscular power is used to best advantage owing to low and short-throw shoveling.

(9) Faces can be kept in working shape at all times at low expense whether the mine be operating or idle.

(10) In any given seam and for a given capacity and style of rolling equipment less brushing of slate is needed than with any other mining system.

(11) Due to a special system of ventilation, an aggregate face development can be provided, lawfully, safely and easily, which is capable of yielding a daily tonnage such as with other methods is obtainable only by multiplying the number of working lateral headings at the corresponding expense for increased trackage and rolling equipment, maintenance and supervision, to which disadvantage of ordinary plans must be added a proportionate multiplication of all kinds of delays and accidents.

(12) Every lateral heading is autonomous in its operation, constituting in itself a separate mine, one in which the system may be applied advancing or retreating, as the operator may choose.



Big Lump of Utah Coal Placed on Exhibition in State Capitol

What is said to be the largest lump of coal ever mined has been placed on permanent exhibition in the Utah State Capitol, in Salt Lake City. The lump was placed there at the request of the Secretary of State, H. E. Crockett. The block was mined at the King mine in Mohrland, Utah. It was found 2,000 ft. underground. From the mine mouth to the railroad at Hiawatha the lump traveled a distance of 6,000 ft. by tramway. Special equipment had to be made to handle the lump in the mine. The coal was taken from a seam 30 ft. thick. It was undercut and uppercut by machine, the sides and back being shaped by hand. The cost of digging and handling from mine to the Capitol Building was approximately $2,000.

The block is 5 ft. square and 10 ft. long and weighs 22,000 lb., including the iron bands which form its crate. These bands weigh 1,100 lb. To convey the huge lump to the Capitol eleven horses were hitched to the specially constructed vehicle carrying the coal. The 11-horse power proved futile. Then five horses and a motor truck were employed. This equipment negotiated the steep grade to the State House.

Contrast Between Our Lignite and German Brown Coal

Cologne Brown Coal Is Almost Two-Thirds Water, Ours One-Third —German Product Has 2½ to 13 per Cent Agglutinating Matter, Ours Less Than 1½ per Cent—Brown Coal Soft, Ours a Mineral

By O. P. Hood*
Washington, D. C.

ALTHOUGH I had read many reports about the brown-coal industry of Germany, actual inspection gave me several impressions for which I was not prepared. We had fallen into the careless habit of thinking about German brown coal and American lignite as similar material. The great briquetting industry which has been built upon German brown coal has been frequently pointed to as an example of what we should do with our own lignites. This puts one in a frame of mind to expect a greater similarity in raw material than actually exists.

Analyses of the two materials indicate a great difference in water content. Our lignite has approximately 35 per cent moisture, whereas German brown coal in the Cologne district has about 60 per cent. Along with this difference in the moisture content is a considerable difference in physical character. Brown coal is much more like earth than like rock. It is far less consolidated than our lignites. We would not think of trying to force a spade into a bed of our lignite, but this would be quite possible with much of the German brown coal.

A piece of brown coal slightly consolidated and 3 in. thick is readily broken with the fingers like a piece of corn bread. Throughout a mass of brown coal small pieces of wood are much in evidence. The binding material between the annual layers of wood growth has almost disappeared, leaving the thin chips to curl and crumble when exposed to the sun. One small pile of brown coal exposed to the weather for a couple of months has the appearance of a chip pile.

Most of the Coal Is of Earthy Texture

These woody pieces have turned a dark chocolate brown, and they have various degrees of friability. Occasionally large chunks of wood are found that would offer considerable resistance to any digging device. The beds in various places vary in the proportion of fine and coarse material but in general the material is distinctly earthy. When taken to the briquetting plant the brown coal is passed over screens which take out pieces over about 3 in., and these are diverted to the boiler house for steam making.

The remaining material above ½ in. is readily broken up in a disintegrator. Our own lignite would have to be put through rolls or a jaw crusher. The vegetable growth that furnished these great beds varied from time to time, so that in some places there is a distinctly banded appearance, the color varying from various shades of chocolate brown to a light yellowish brown. In mining by hand the material is easily dislodged with pick and shovel. Blasting seems unnecessary, and the excavating machinery scrapes it off a steeply inclined face.

Our own lignite, however, is consolidated, so as to be quite comparable in hardness with our more familiar bituminous coal. It is mined in the same manner as is soft coal, by the use of coal-cutting machines and explosives. It usually occurs, also, in measures that have rock above and below, whereas in the German measures the overburden is sand, gravel and clay. These differences are responsible for the different methods of working. The greater part of German brown coal is taken from open pits by means of excavating machinery.

There is a limit, of course, to the depth of the overburden, as compared with the thickness of the coal, that can be economically removed, and when this limit is exceeded underground mining methods are used. Those parts of the beds that can be worked from open pits are developed first, but as the industry grows older the deeper lying portions will be worked by underground mining at a higher cost.

Our own lignite can in places be stripped of the overburden by excavating machinery, and can be loaded into cars by the same machines. This work probably would be done by our standard dipper excavators, and machines of this type are to a limited extent used in brown coal, but the relatively easy digging together with the uniformity of material has led the German engineer to develop in high degree the chain bucket excavator for this work.

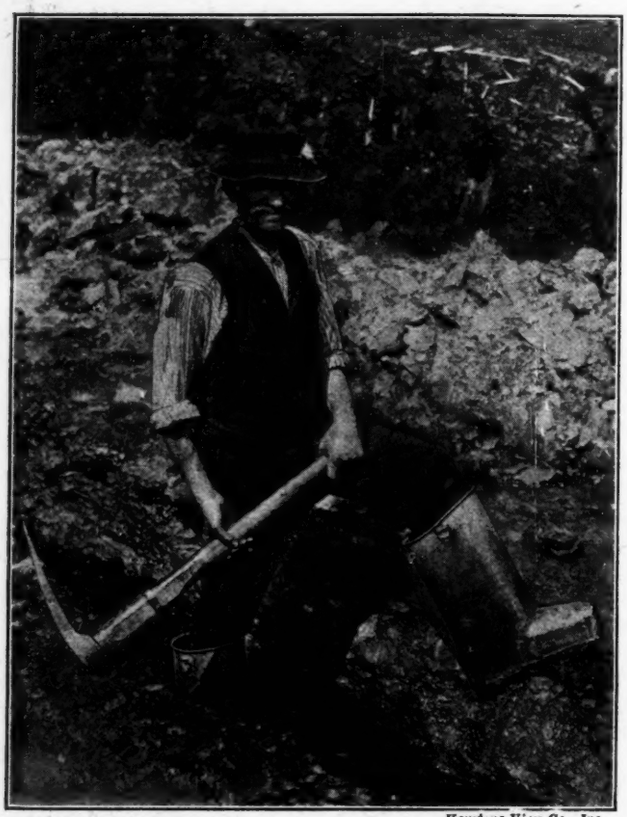
Beside these physical differences there are important chemical contrasts. Certain materials in brown coal, on being heated, form an excellent binder and waterproofing material. The temperature at which this material develops is well below that of the distillation of any of the other coal substances. The percentage of this binder in the raw material must be at least 2½ per cent if briquets are to be produced by the German method. This method, briefly, is to subject the brown

Keystone View Co., Inc.

CHAIN BUCKET CONVEYOR DIGGING BROWN COAL

This coal deposit is so soft that it can be dug like sand by a dredging bucket or "landbagger." Note the soft partings in the coal and the smoothness of the excavated surface. This system would work with American or other peat but not with American lignite. This illustration is from a photograph made in the Nieder Leusitz district.

*Chief mechanical engineer, U. S. Bureau of Mines.



Keystone View Co., Inc.

WORKMAN IN GALVANIZED-IRON BOOTS CUTTING DITCH

Scene from a brown-coal mine in the Nieder Leusitz district. Even the boots in Germany are "ersatz," or substitutes, in some cases. These fields needed much drainage. Note the pick with its novel fastening and single point—somewhat light for digging clay. The pick shape shown is prevalent in the mines of Continental Europe.

coal, which has been dried to a moisture content of about 13 per cent, to high pressure, pushing it through a converging die which generates sufficient heat by friction to melt the inherent binder and thus waterproof each particle. Different brown coal beds possess this natural binder in varying quantities up to more than 13 per cent.

The low-temperature distillation of this material yields lubricating greases and paraffine from which candles are made. Most of our American lignites have binding material of this sort in quantities less than 1½ per cent. This immediately suggests that our own problem of briquetting is fundamentally quite different from that of the German brown-coal area. We are quite justified in looking to the development of the brown-coal industry as an excellent example of what can be done when it is necessary to beneficiate a low-grade fuel, but we are not justified in looking to this example for specific technical detail as a solution of our own lignite problem.

America has a lignite problem that must be solved in our own way to fit our own raw material and to suit our own economic conditions. The German brown coal occurs in well-populated districts where there is a high degree of industrial development coincident with a scarcity and relative high price of other fuels. It is in the possession, also, of a people who have not always had the choice of an abundance of the best coal and who have already acquired an attitude of thriftiness toward the use of heat.

Our own lignite occurs in districts furnishing a far less concentrated market and a much smaller degree of industrial development, and where the distances from coal field to a market are much greater. Our lignite also occurs among a people quite familiar with some of the best coals on earth and with habits of using heat in quantity, particularly for domestic purposes, quite unknown to European habit.

The brown coal industry of Germany at the present time is rapidly developing, as a result of the scarcity of industrial fuel. There is a real shortage of fuel which can be met in the most expeditious manner by the development of brown coal. While a relatively small percentage of Germany's total fuel resources are in the form of brown coal, they are turning to this portion for rapid development at this time. There is enough of this material to last from eighty to a hundred years, and the methods of mining and treating have been developing since about 1856, so that practices are substantially standardized and can be applied with little risk and uncertainty.

In 1921 the total output of brown coal was 123,000,000 tons, while more than $28,000,000 tons of briquets were produced. The raw brown coal is used for industrial purposes on step grates, but since it has only from 3,200 to 4,500 B.t.u. per pound, it is quite evident that it cannot be transported any great distance, except under extreme need. The briquets, on the other hand, make a most excellent fuel for industrial and domestic consumption.

It takes about three tons of brown coal to produce one ton of briquets, one ton of the raw material being required to reduce the remaining two tons to one of briquets. The briquets, however, have a fuel value of about 8,600 B.t.u. per pound. Although they have less heat value than good natural coal, these briquets are sometimes preferred by the domestic trade because of their convenience and cleanliness.

Many Engineers Enter Commercial Branches

THAT engineering college graduates are handicapped without a supplementary commercial training is the basis of research investigations just completed by Dr. W. F. Rittman and W. F. Reilly, of Carnegie Institute of Technology, Pittsburgh. In the *Carnegie Technical Journal*, a quarterly publication of the alumni and students of Carnegie Tech. Dr. Rittman and Mr. Reilly present substantial proof of the need of commercial training in technological college courses.

With the co-operation of the alumni office, a study of the present occupations of Carnegie Tech. graduates was made. Of the graduates from 1908 to 1921, the investigations showed that approximately 67 per cent of the total engineering graduates are now engaged in commercial or managerial work. This majority becomes significant in consideration of the fact that "engineering" graduates include a wide range of highly technical fields such as mechanical, electrical, civil, chemical, metallurgical, mining, sanitary and science.

An interesting tabulation in the report shows the following percentages of engineering graduates in all departments who are now in commercial or managerial capacities: Mechanical engineering, 65 per cent; electrical engineering, 60 per cent; civil engineering, 73 per cent; chemical engineering, 59 per cent; commercial engineering, 91 per cent; metallurgical and mining engineering, 67 per cent; sanitary engineering, 60 per cent; science, 77 per cent.

Pack Coal with Caterpillar Tractor to Prevent Storage-Pile Fires

THE tendency of bituminous coal to fire spontaneously when stored in large quantities long presented a serious problem to the Philadelphia Electric Co. and others who are compelled to store coal for months or even years at a time, says an article by James R. McCausland in *Current News*, which is published by that company's section of the National Electric Light Association.

The Coal Bureau, among whose duties are included the extinguishing of such fires and the development of methods for preventing them, has been experimenting with methods of storing coal for several years and has now arrived at a solution which is proving successful.

Some kinds of coal are entirely unsuitable for storing under the best conditions, but even good coal stored improperly will develop fires. When a fire is discovered in a storage pile the only satisfactory method of extinguishing it is to dig it out, remove the coal to another section of the yard and spread it out to cool. Water is not effective on these fires, nor can they be smothered by covering with fresh coal.

The method of storing coal most used formerly was by locomotive crane. The crane hoisted the coal from the cars in its clamshell bucket and then swung around and dropped the bucket load on the storage pile. It was found quite early that about 10 ft. was the maximum height to which coal safely could be stored by this method. It was later found that the susceptibility to fires of coal stored in this way was due to the fact that all of the lumps in any bucket load rolled down to the bottom of the pile, forming a honeycomb arrangement through the spaces of which air could reach the interior of the pile, while the fine coal was all left at the top of the pile. This infiltration of air to the center of the pile caused gradual heating up to the ignition point.

To discover, if possible, this heating before a fire developed or at any rate before a large quantity of coal was consumed, temperature observation pipes reaching to the bottom of the pile were placed at intervals, so that thermometers could be inserted and any rise in temperature noted before the danger point was reached. This method, however, was not always effective, because fires have been found within 5 ft. of the temperature pipes without causing a noticeable rise in temperature at the location of the pipe. Furthermore, fires were not prevented in this way but merely discovered early and kept under control.

It was found that storing by contractors' dump wagons was an advance over this method because all the coal, lump and fine, was left at exactly the location in the pile at which it was dumped and there was no concentration of lumps at the bottom and fine coal at the top of the pile. Also the trampling by the horses and rolling by the wagon wheels compacted the coal quite thoroughly, greatly reducing the spaces through which air might circulate. This method has disadvantages, however, which caused a further solution to be sought. Storing by contractors' dump wagons is practically prohibitive in cost—about three times that by locomotive crane; it is very slow; and coal is wasted by being pulverized and blown away, and also by being dragged down the side of the pile and ground into the mud or cinder fill in the storage lot.

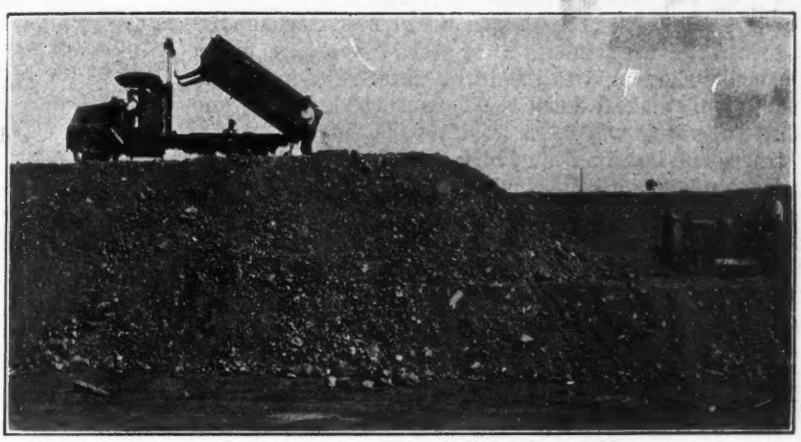


FIG. 2—HERE THE COAL IS DUMPED BY MOTOR TRUCK

The caterpillar tractor is on hand, making firm and air-resisting the first bed of coal spread by the motor truck. Plank is laid for the truck so as to prevent the excessive breaking of the coal. When ground too fine it is likely to be blown away.

An idea taken from the war has resulted in the development of the method now being used. At yards having locomotive cranes the coal is spread by the cranes in layers 3 to 4 ft. in thickness and then rolled, as shown in Fig. 1, by a caterpillar tractor—a small second cousin to the tanks used in France for rolling out the Hindenburg line. The tractor hauls a drag made of rails, and by the action of this drag as well as by the rolling effect of the tread of the tractor the coal is compacted just as by wagons. Where there are no locomotive cranes motor trucks are now being used instead of horse-drawn wagons and have proved themselves highly superior. They can handle much larger quantities of coal in the same time, the cost is much less, and the pulverization of the coal is practically eliminated by planking over the drive by which the truck reaches the dumping point. This modification of the method is illustrated in Fig. 2.

FIG. 1—CATERPILLAR AND DRAG COMPACTING COAL

The coal is laid by locomotive crane in layers 3 or 4 ft. thick. The caterpillar tractor with a rail drag is then run over it, which makes it so tight that air for its combustion is excluded.

In addition to preventing fires the method last described permits at least a third more coal to be stored on a given area because it has been found already that a height of 12 to 14 ft. is entirely practicable. Further experience may show that the maximum height may be raised even more than this.

Reading Power System When Completed Will Be Largest in Coal Mining

IN ITS Schuylkill County and Northumberland County operations the Philadelphia & Reading Coal & Iron Co. is developing what in its entirety will be the largest electric power system in the world that is devoted entirely to coal mining and one of the largest purely industrial electric systems in this country.

It will eventually comprise five or six large modern power stations, tied together in one great system supplying power to the company's forty-odd operations, to the Pottsville shops and to incidental uses. The individual plants will generate from 15,000 to 20,000 kw. each, and the total power will be at least 100,000 hp.

There will be 85 miles of high-tension line, carrying a current of 23,000 volts, and additional secondary mileage in the way of service connections and direct cables, through boreholes, to powerful pumps in the mines. These pumps will operate at the high tension, and some of these installations, notably at the Draper mine, are completed.

Would Light Every House in Philadelphia

The completed system will, at a conservative estimate, supply enough power to illuminate every house in a city like Philadelphia, with some left over for general purposes. Its development foreshadows at the Reading mines the almost universal substitution of electricity for all other forms of power in operating mine and breaker machinery, and it also implies the elimination of seventeen engine-driven non-condensing power plants—sixteen at mines and one at the Pottsville shops.

Two modern electric plants which will be incorporated in the new system already are in operation—a 5,000-kw. plant at Good Spring and a 4,800-kw. plant at Locust Spring. These plants are tied together now in a system which runs from Brookside, in the west end of Schuylkill County, to Pine Forest, a little north of Pottsville, thence north to Indian Ridge, near Shenandoah, and thence west through the Mahanoy Valley to Locust Spring, the total mileage of primary high-tension line already being about 55. A line is now being built from Locust Spring to Bear Valley, west of Shamokin, and later a short link will run from Bear Valley to North Franklin at Trevorton, the extreme northwest of the Reading properties. Next summer a line will be run south from Pine Forest to Pottsville, to supply the shops, and another line will run from Pine Forest to Silver Creek on the east. At Silver Creek one of the proposed new plants will be built.

An additional extension from Indian Ridge to North Mahanoy and the territory now supplied by the old North Mahanoy plant will complete the high-tension mains already in operation. The old electric plants will not be scrapped but will be retained as emergency units.

The great extent to which electricity is used by the Reading, even under the present system of isolated stations, is shown by the statistics. The company is now operating more than 100 miles of underground trolley line, has 140 electric locomotives in service, operates 106 electric pumps and charges about 9,000 electric lamps for miners. Incidentally it has its own independent telephone system, with independent trunk lines and with six exchanges, reaching every part of the property.

The Good Spring plant, opened in June, 1919, was the first unit designed for the proposed new system, and it typifies in a general way what will be done at other plants. This station was placed at Good Spring because that point is central for the Tremont district, because ample supplies of barley coal were available at that colliery, and because Pine Creek, near by, supplied sufficient water for effective operation. The boiler plant and dynamo room are constructed of brick and steel. There are seven Stirling water-tube boilers generating 4,500 hp. and fitted with Coxe traveling stokers. Coal is supplied from overhead bunkers, which are fed by a conveyor line from a large bin, the bin in turn being supplied with coal by an aërial tramway running to the foot of the breaker. Ashes are disposed of by a flushing system which washes them into a large tank, whence they are hauled by a 20-ton car to the spoil bank. The boilers have automatic regulators controlling the speed of the stokers, thus maintaining constant steam pressure, and each boiler has a steam-flow meter to indicate the actual work it is doing.

The generating equipment consists of 5,000-kw. steam-turbine generators operating at a pressure of 150 lb. and condensing at a vacuum of 28.5 in. The condensers are of the barometric type.

Power is generated at 6,600 volts and conducted to an eleven-panel switchboard equipped with indicating and recording instruments for measuring electric current. It is controlled through oil circuit breakers and is distributed to the collieries in the Tremont district at a line voltage of 6,600. For long-distance transmission there is a transformer station which steps up the potential to 23,000 volts, and it is carried through the rest of the circuit at that voltage. At each colliery supplied from this high-tension line a transformer station is installed, equipped for measuring and controlling the power consumption at that mine, the voltage being stepped down from 23,000 to 2,300 for colliery distribution. At present there are twenty-two transformer stations installed, having a combined capacity of 25,300 kw. These stations, like the power station, are protected from lightning by means of the latest oxide-film lightning arresters.

Pumping Problems Above and Below Ground

Water for Good Spring is obtained from Pine Creek, 5,600 ft. distant, and is pumped to an elevation of more than 800 ft. To save water in operation, all the water from the condensers is pumped by centrifugal pumps through spray systems which reduce the temperature from 100 deg. to 85 deg., the same water being used continuously and the evaporation being less than 2 per cent.

Pumping is expected to be the constantly increasing consumer of electric power, as at present an average of 11 or 12 tons of water is raised for every ton of coal, and the proportion of water per ton mined may be expected to increase as the mines go deeper.

In addition to the general saving which a modern power system, such as described, may be expected to show over a group of isolated colliery stations, there will be a large saving in fuel. Good Spring burns nothing but barley coal, thereby releasing the larger sizes

which are required elsewhere, and each additional plant to be erected in the new system will accentuate the saving in this direction.

Rotary and Endgate Dumps Compared

AT THE Coal Mining Institute of America the value of rotary dumps was questioned by a member located at Beaverdale, Pa. He asked "At drift or slope mines where the coal is 3 or 4 ft. thick are rotary dumps more efficient than crossover dumps?" In his reply Sheldon Smillie said he supposed the thickness of the coal was mentioned in the question as a means of determining the size of the car used. Evidently the interlocutor felt that with a small car the rotary dump did not have sufficient capacity and reduced the tonnage dumped. The rotary dump is a crossover dump, but, that point conceded, it is as well to use the parlance most frequently adopted and regard the "crossover" as being the ordinary crossover end dump.

The regular crossover, if crowded, can dump eleven cars a minute, but that cannot always be attained, said Mr. Smillie. The rotary single-car dump is guaranteed to discharge four cars per minute. In practice it will dump under pressure eight or nine cars in a minute. The solid car which the rotary dump will discharge is cheaper than the endgate car which the end dump demands, but there is not much difference in the cost of the smaller sizes of the two types of car.

The main argument for the rotary dump is in the upkeep. The West End Coal Co., in the anthracite region, declares that $5 per annum is spent on each endgate car for such repairs as occur to the endgate or are due to the weakness which the use of the endgate causes. The introduction of the solid car has made it possible to make the flare on the side of the car horizontal and to let the wheels protrude into the car body, the tops being covered over with a light housing. It has also made it possible to build wider cars than heretofore, with further increase in capacity.

The solid car reduces leakage. At one mine, before the solid car was introduced eight men were kept steadily employed cleaning roads; now two men perform that service satisfactorily. Of course, as the cars at the mines before and after the change were loaded only level full, the comparison cannot be applied without much revision to conditions where the loads are built up several inches above the tops of the car sides.

Leakage keeps the rail covered with coal and, as the coal is wet, gives a rail with low adhesive qualities. In consequence much sand is used, and the coal shoveled up from the track is so mixed with non-combustible as to be of little value for combustion. As the coal in falling is broken it becomes so fine that it mingles with the sand and then cannot be separated.

With the endgate car the coal that is built up above the sides is likely to be dumped over the top of the door instead of through the door opening. In that case the coal is badly broken. The end-dumping car also refuses to dump completely when the coal is wet. The coal may have to be jarred loose or shoveled. With a rotary dump which will jar the car in the overturned position wet coal is readily discharged. The long rotary dump which will discharge a train of cars without uncoupling not only saves the work of dissembling and assembling the trip but gives all the advantages of train operation.

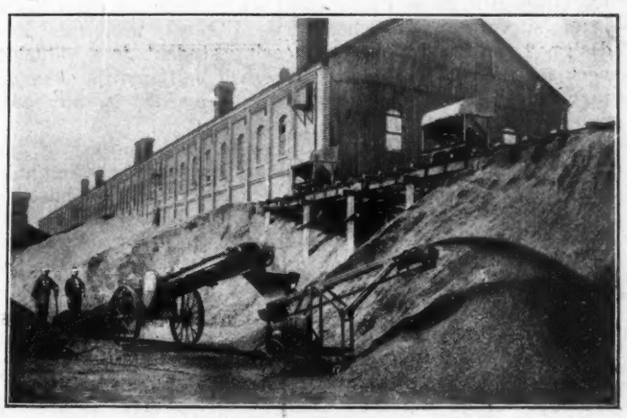
One car may run harder than another. If a nimble car follows a stiff one on a crossover dump it may catch it at the kickback switch and cause a collision. The grades must be made for the badly running cars with the disadvantage that the better cars will almost run away and need some holding back. But working with trips a sort of average is struck and one trip will act much like another when passing over the same grade, and the grades can be made to suit this condition.

Another advantage with the rotary dump is that no tipple need be built. The cars need not leave the hill. They can be dumped on the side hill and the coal allowed to run down a chute to the car, the screens or a picking table, as desired, that is if conditions are favorable to such an arrangement. All that is needed is a shed to protect the screening and picking devices. Thus much timber is saved. With the crossover end dump the track must be turned at right angles to the hill and the tipple extended far enough to provide for a kickback.

J. Milton Duff being called on said that the leakage from an endgate car was not considerable. Most of the coal on the mine track resulted not from leakage but from spillage. Trouble had been found with rotary dumps from the fact that coal sometimes wedged between the car and the plate in the revolution of the dump. He said also that eleven or even twelve cars had been dumped per minute over the crossover and that eight cars was the capacity on which figures usually were based. Eleven or twelve cars per minute can be dumped only where one-ton cars are in use. However, ten cars can be discharged per minute where they are of two-ton capacity.

Japanese Store Coal with Belt Conveyor And Box-Car Loader

ONE of the simplest ways to store coal and well suited to small-capacity storage is to use a portable belt conveyor or a series of them. At a Japanese plant shown here a Link Belt conveyor is caused to deliver coal to a Pratt box-car loader. This loader is intended for delivering sand and other materials to the far end of a car, and for this it is well fitted, as it takes up little space itself and can be readily managed in small compass. It is, it is true, a little rough in its operations, but as the coal it is handling is already fine and as it is delivering onto a pile of slack no damage is done such as might accrue with a high-grade lump coal, especially when falling on an unyielding floor. For those who regard a steam or electric shovel as too expensive the use of a conveyor of one type or another will greatly appeal.



ONE OF THE MANY WAYS IN WHICH COAL IS STORED

At this plant in Japan a conveyor and a box-car loader are being used to transfer coal in storage.

Book Reviews

Tentative Standards for Testing Materials

Every year the American Society for Testing Materials issues a book entitled A.S.T.M. Tentative Standards. This year 163 such standards are included—18 relating to steel, wrought and cast iron; 13, to non-ferrous metals; 27, to cement, lime, gypsum and clay products; 15, to preservative coatings; 13, to petroleum products and lubricants; 35, to road materials; 4, to coal and coke; 9 to waterproofing; 5, to insulating materials; 4, to shipping containers, 12, to rubber products; 4, to textile materials and 4, miscellaneous. The tentative standards are printed for one or more years with a view to eliciting criticism, of which the committee concerned will take due cognizance before recommending final action by the society.

Specially interesting to coal-mining engineers may be mentioned those on carbon tool steel, boiler and firebox steel for stationary service, lap-welded and seamless steel and lap-welded iron boiler tubes, iron and steel chain, merchant bar iron, foundry pig iron, chilled cast-iron wheels, chemical analyses of plain carbon steel and alloy steels, heat treatment of carbon-steel castings, white-metal bearing alloys or babbitt metal, compressive strength of portland-cement mortars, concrete aggregates, compression tests of concrete, test for fusibility of coal ash, shatter test for coke, terms relating to coal, structural Douglas fir, testing small clear pieces of timber, testing insulating varnish, testing electrical porcelain, testing transformer and switch oils, insulated wire and cable, cotton or rubber-lined fire hose, wrapped hose and braided hose for use with pneumatic tools, steam hose, rubber belting for power transmission purposes, adhesive tape for general use for electrical purposes, rubber insulating tape, rubber gloves for electrical workers, rubber pump valves and testing rubber products.

Some specifications—only a few—are too broad, such as the one specifying that lump coke should be dried at a temperature between 104 and 200 deg. C. and that the depth of a coke shatter box shall be approximately 15 in., which is objectionable because the height of the box is a part of the distance the coke has to fall. A little breadth is sometimes needed in defining a product like, say, gasoline or carbon steel, but why not in describing the equipment for a test? Attention will be called elsewhere to the definition of volatile matter in coal. The book contains 774 pages and measures 6 x 9 in. It is a credit to the painstaking and scholarly society by which it is issued, whose address, by the way is 1315 Spruce St., Philadelphia, Pa.

Chemistry for Coal Salesmen and Others

Parr's third edition of "Fuel, Gas, Water and Lubrication" (McGraw-Hill Book Co., New York), though written as a brief survey of the chemistry of these materials and designed for use by the engineering student, is a valuable book for the coal salesman. Here will be found the elementary things about coal that must be learned by any coal man who must tell about his product.

Following a brief but useful statistical summary of the reserves and production of coal are chapters on sampling, analysis, classification of coals, coal contracts, combustion, storage and spontaneous combustion. The treatment, of course, is technical, not popular, but the ideas are carried to the eye by diagrams and tables in such a way that the non-technical may easily grasp them.

That the majority of examples and much of the discussion center around Illinois coals—the book is based on lectures by the author at the University of Illinois—does not detract from the usefulness of the work.

Boiler waters and their analysis are covered, as are the subjects of coke and gas.

Even more technical will be found "The Practical Chemistry of Coal and Its Products," by Findley and Wigginton (Benn Brothers Limited, London). This book is intended for chemists at gas works and coke mines.

Sampling and the elementary form of analysis of coal are simply covered. What will doubtless be of more value to works' chemists are the outlines of analytical methods of determination of the light oils, benzol, toluol, etc.

The work throughout is characterized by brevity of treatment. No words are wasted, but the meaning is clear. The analysis of mine gases is treated in 8 pages. It is a book for chemists and not for laymen.

Transvaal Chamber of Mines Report

The thirty-second annual report of the Transvaal Chamber of Mines, covering the year 1921, was published in Johannesburg on Aug. 9, 1922. As its title implies, its 271 pages are devoted to a review of mining conditions in the Transvaal. In addition to detailed reports of the Chamber, its activities, membership, the work of its various committees, etc., there are several appendices devoted to the mining industry as a whole.

Appendix No. 1 deals with the Chamber's correspondence and reports on native labor, dust allaying, survey commission, customs tariff and other important subjects coming within the scope of the organization. The second appendix outlines the case of the Chamber in its dispute with the South African Industrial Federation. Follows a chronological account of the dispute on the Transvaal gold and coal mines; comprehensive statistical tables on mineral production, dividends, labor, etc.; reports of quarterly meetings, and records of the companies registered and liquidated during the year.

The statistical data are very complete, well presented and of considerable use for historical and other purposes. Aside from this feature, however, the report is of value chiefly to the Chamber's membership.

Forms for the Labor-Purchasing Department

Two of the new ventures in industry are the purchasing and personnel departments. The former is the older of the two. It started out, it is to be feared, with the motto unexpressed but too often implied: "Anything so it's cheap." Purchasing departments have reformed. They are beginning to put quality, life, adaptability and the responsibility of the firm supplying the goods ahead of mere cheapness.

The personnel department, on the other hand, always has striven for quality. It was given a price and told to get the best value it could for the money. Much is known about its methods, and C. N. Hitchcock, of the University of Chicago Press, Chicago, Ill., in a small paper-backed volume entitled "Forms, Records and Reports in Personnel Administration," has brought together much of this information. This little book of 127 pages measuring 6 x 9 in. contains 103 different forms and appears to be a painstaking compilation.

After a man has been employed the employer frequently wonders why he did not make certain inquiries as to the employee's fitness. A form filled out at the time of the employment will prevent such an oversight, and a correct record will aid in averting the re-employment of a man whose previous record was unsatisfactory. There are many other uses for such records. In future we may be more careful as to whom we introduce into our industrial families, and we shall then have less trouble in our industrial organization, for men will strive to meet and retain the qualifications which personnel departments require.

IN PREPARATION FOR A REPORT on analyses and characteristics of Alabama coals, field representatives of the U. S. Bureau of Mines have taken 376 coal samples from 79 mines in that state.

FUEL HINT—When you get a cinder in your eye run home and put it in the coal bin.—*Toledo News-Bee.*

Problems of Operating Men

Edited by James T. Beard

Diplomacy vs. Merit as Factors in Promotion

Analysis of the Situation—Causes That Affect Choice Between Two or More Applicants — Causes of Non-promotion — Diplomacy a Controlling Factor

SOME months ago there appeared, in *Coal Age*, a letter by a western writer who deplored the fact that meritorious effort was so frequently unrewarded. I remember the writer claimed that the ability to tell a funny story appeared to be a stronger recommendation in securing promotion, than merit by reason of knowledge and experience.

The statement, I recall, brought forth numerous letters denouncing the charge. My own experience as a miner and mine official, however, inclines me to accept the statement as true, since it agrees with my own conclusions in several instances that have come under my observation. More than once, I have attempted to analyze the situation in hand, with a view to ascertaining the actual cause of the distinction made in the choice between two individuals in line for promotion.

Causes That Contribute to or Hinder Promotion

Investigation showed that promotion is often the result of personal friendship; influence of friends; fellowship in social organizations; peculiar adaptability of the applicant to the purposes of those in authority; and, lastly, the ability of an applicant to "throw the bull," as we say, or impress the employer by the force of his personality.

In contrast with these contributory elements, in the promotion of employees, the following are a few causes of non-promotion: There may exist a personal dislike of the applicant, on the part of the one in authority, who may be jealous of his aspirations, or fear his ascendency, or regard him as too honest for certain hidden purposes of a purely selfish nature.

It will often happen that the failure to secure promotion is due to the individual's relying too firmly on his record, expecting his work to speak for itself. Undoubtedly, this is the case with many of our best workers, who are prone to let their work speak for them, instead of themselves speaking for their work. To boast or even speak of what they have done is contrary to their nature.

In the struggle for ascendency and success in life, there are certain natural or physical elements that are inherent in the individual, such as perseverance, initiative, aggressiveness and personality, all of which are capable of growth and development. Another faculty with which men are unequally endowed is the quality of being tactful or diplomatic.

Analyzing the Situation

This last named quality can only be developed by a close study of human nature with all its conditions and environments. A man may have a complete knowledge of the principles of coal mining, gained through study and practical experience; but his success as a foreman will depend, primarily, on his being able to handle the men in his charge, with tact and diplomacy, without which he cannot hope to gain their confidence and respect.

Now, if this brief analysis is correct, we must naturally infer that the qualities to be cultivated, in seeking advancement, must include the ability to be diplomatic. Proof of this quality, however, is only to be had in the practical test.

The exercise of diplomacy is as important in a mine foreman's relation to and contact with his employers as with his men. If tact fails in dealing with his men, the foreman can still resort to more urgent measures; but strong-arm methods are futile in respect to his superiors, whose word is power.

Diplomacy Wins the Day Where Lack of Tact Fails

By way of illustration, let me assume that a certain foreman's opinion differs from that of his superintendent in regard to the work in hand. A tactless foreman, with the best intention and the courage of his conviction, may give blunt expression of his ideas in a way that would naturally offend his superior and fail in securing any results.

On the other hand, a tactful foreman will handle the same situation, with a delicacy and a courteous display of appreciation that is akin to flattery and, in nine cases out of ten, the obsequious foreman will win out by virtue of his diplomacy.

In conversation with an operator, in regard to the selection of a mine official, I recently propounded the following: If two men apply to you for an official position—the one simply signifying his willingness to be judged by his work; and the other making a parade of what he has done and stating particularly what he can do under the present conditions, while demanding your judgment on suggestions he throws out—to which of these men would you give the preference, in the absence of other recommendations?

Without hesitating a moment, my friend replied, "To the one who made the display of his capabilities." Now, if this is the attitude of the average coal operator, and my observation inclines me to think that it is, modest worth is irretrievably handicapped in seeking advancement.

Before closing, allow me to suggest that it might not be a bad economic feature, while it would certainly be justice to worthy employees, if large corporations would each employ a man who can be entrusted with the investigation of individual merit, and authorize him to recommend men who are, in his judgment, capable and worthy of promotion.

While the generally accepted doctrine that "a man eventually gets what he deserves" may be right, it is equally true that a man does not always deserve what he gets.

Washington, D. C. GLENN GLOM.

Leaks in the Coal Business

Inefficient management an injustice and loss to the public—Waste in the extraction of coal—Failure to properly clean coal for shipment.

WHEN one considers the injustice and loss sustained by the consuming public, through inefficiency in management and wrong methods of mining and marketing the coal, it is surprising that more notice is not taken in the daily press and other publications, regarding the matter.

It does not require a deep study of the situation to prove the crying need of such a fact-finding commission, as has recently been appointed by the president, to ascertain the facts and recommend what is needful to secure the greatest public good.

There is much for this commission to consider in working out a plan that will give a square deal to all concerned and bring satisfaction and contentment to those who now carry heavy burdens by reason of the conditions that have been allowed to grow and develop without seeming restraint, since the close of the war.

Beginning with the management of coal operations, there is scarcely a doubt that many individuals are now holding office and drawing good pay

whose work is not adequate to the expense of their employment. In fairness to all concerned and especially to the consuming public on whom the burden will eventually rest, all such positions should be eliminated, with the aim of securing the highest possible efficiency in management.

Attention has been drawn by many writers to the great waste prevailing in the extraction of the coal, through the employment of methods not suited to the conditions existing in the seam. It is only necessary to add here that the loss to the coal industry, in this respect, is irretrievable. Thousands of tons of coal are abandoned each year and lost beyond recovery.

Shipping Impure Coal a Handicap

At the present time, the coal industry is experiencing another handicap, one that developed large proportions at the time of the war; namely, the failure to properly clean coal for shipment. The blame for this omission rests partly with the miner who is not careful to separate the slate and bone when loading his coal and, in part, is the fault of the operator. The enforcement of strict regulations and careful supervision will largely overcome this evil.

Many operations are not equipped with suitable means of cleaning the output as it comes from the mine. In many cases, cleaning tables should be installed and the coal freed from its impurities before being loaded for shipment. The transportation of unclean coal means a considerable loss to the consumer, in freight charges, to say nothing of the added loss in heat value.

Inequality of Wages a Cause of Much Dissatisfaction

One cause that cannot fail to receive the attention of the President's fact-finding commission is the existing inequality of wages paid for labor of various kinds, in the mining and handling of the coal. Probably no single cause is responsible for the same amount of dissatisfaction and trouble, as the wage question. When it is considered that two hours of labor a day brings some men, employed in the mine, $17.50, while others laboring eight hours a day receive only $4 for their work, it is evident that some revision of wages is needful.

Again, machine men, working in thick seams that often contain much of impurities, are paid the same price per ton, as the men cutting coal in thinner seams. Naturally, work in the thicker seams brings big wages, often far in excess of what the men can earn in cutting low coal. Without doubt there is need here for an equalization of the rate of pay.

To me, a coal miner for more than 33 years, it is evident that this comission must establish a just basis of profits and compensation for labor that will be equally fair to all concerned.

These items and many others of equal import may well receive the careful study of a fact-finding commission. The eliminating of middle-men, in the sale of coal to the individual consumer, will also greatly assist in lowering the ultimate price to the public.

Linton, Ind. W. H. Luxton.

Improved Longwall—Explanation

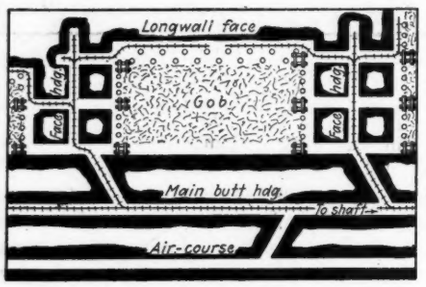
Face headings dividing panels driven single instead of three abreast—Timbers set as longwall face is advanced to break roof and protect pillar.

In the issue of *Coal Age*, Nov. 9, p. 759, F. C. Cornet has kindly drawn attention to a point that I had failed to make clear in my previous letter (Sept. 21, p. 455).

In that letter commenting on an improved method of working longwall panels, advancing, I proposed driving the face headings separating the panels, single instead of three abreast, as was suggested in the original article by M. L. O'Neale (Vol. 21, p. 877).

As stated in my letter at that time, the scheme suggested by Mr. O'Neale, of driving face headings between the panels and keeping these headings a few yards in advance of the longwall face has unquestionable advantages. My suggestion was to drive these headings single, instead of three abreast, however, and thus save a considerable expense for yardage.

In order to bring the matter more clearly before the reader, I have revised



IMPROVED METHOD OF ADVANCING LONGWALL WORKING

my sketch so as to show the timbers that I intended should be set to break the roof and maintain an air passage between the gob and the coal rib when drawing back the pillars. As shown in the accompanying figure, these breaking timbers are reinforced by cribs built at each crosscut. In my previous letter, I assumed that this was understood to duplicate the method already briefly described by Mr. O'Neale, in his original article.

With this explanation, I think Mr. Cornet and other readers will agree that driving the face headings single is an undoubted advantage over driving them three abreast. Under the light cover assumed by Mr. O'Neale, my plan should present no difficulties in respect to ventilation when drawing back the pillars. Indeed, the conditions are similar, in every respect, to those presented in the original article, except for the driving of a single face heading between panels, instead of three headings abreast of each other.

Linton, Ind. W. H. Luxton.

Competent Machine Runners

Experience needed in running and caring for a coal-cutting machine—Expensive to employ incompetent machine men—Capabilities of men fit them for different work.

REFERENCE made by a writer, in a recent issue of *Coal Age*, regarding the choice of men for particular work, leads me to offer a few remarks relative to the competency and incompetency of machine runners. The employment of competent men to operate coal-cutting machines is an important consideration in any coal company.

An electrician whose duty it is to inspect and keep in repair the coal-cutting machines of a large company has a hard job on his hands unless competent men are employed to operate the machines. An experience of seventeen years in operating and keeping in repair machines of various types and makes, run by all classes of men, convinces me of the importance of employing only men fitted for the work.

What Constitutes a Competent Machine Runner

In my opinion, a competent machine runner is one who has had sufficient experience to enable him to take proper care of the machine in his charge. Many seem to think that competency depends on knowing how to switch on the power for operating the machine. My claim is that it is more important to know when to switch off the power and stop the machine.

An inexperienced, careless operator is a great expense to his company and a handicap in the work of cutting coal. Much damage can be done by the man who does not know or understand when a machine should not be run until some needed repairs have been made. Such a man may cost the company four or five hundred dollars, by reason of his lack of knowledge and experience.

Operating a machine that is in need of some slight repair will often cause damage that will throw the machine idle for several days. The expense of making the repairs is by no means the only item. A far greater loss is the delay in cutting the coal and the consequent reduction in the output from that section of the mine.

Where Does Responsibility Rest?

Who, then, is responsible for the employment of incompetent machine men? It often happens that inexperienced men are employed through relationship, or the close friendship of a mine official; and the company must stand the expense of their incompetency or carelessness in the performance of work. There are mine officials who put the company to needless expense in this manner.

Each and every man in the mine should be chosen with regard to his special capability to perform certain work. Different men are endowed with different capabilities which fit them for different tasks. One writer has referred to the duty of a mine foreman

to select men who are fitted for the work he gives them. It is just as important for a mine electrician to select competent men for cutting the coal. If the electrician is efficient, he will make daily inspections of each machine in the mine. Only in this way will he be in a position to know beforehand what will be needed and to make timely repairs.

Observation shows that comparatively few operators realize the great saving in expense, in the operation and maintenance of coal-cutting machines, by the employment of an efficient and competent electrician charged with the duty of employing competent men to run the machines. Moreover, by his daily inspection of the machines, many delays and much expense will be avoided, which will more than offset the expense of the man's employment.

O. KENNETT.

Hillside, Ky.

Developing Mine Officials

Need of moral and mental development —Strict discipline essential—Only one boss worthy of the name.

THE discussion, in *Coal Age*, of ways and means of developing better mine officials has appealed to me with peculiar interest, inasmuch as I have always been strongly inclined toward the moral and mental development of men who are to supervise and direct the work of their fellows. Moral development is largely the result of a high standard of character and favorable environment. Mental development is only attained by arduous study and application.

What I believe would do more than anything else to develop a higher efficiency, in all classes of mining men, is a higher standard of requirement in regard to mining examinations for certificates of competency. It is my belief that a series of five or six annual examinations would not prove too rigid a requirement, in the granting of mine foremen's certificates.

It is generally agreed that our present mine foremen are not developing into managers as fast as they should. Indeed, the facts seem to prove the truth of the old saying, "Once a Foreman, always a Foreman." This should not be true. Instead, a properly trained foreman should eventually develop into an efficient superintendent and manager.

DEVELOPMENT REQUIRES TRAINING

There is no development possible through an indifferent course of training and a low standard of requirement. Such condition may be the result of a lack of necessary activity on the part of the individual himself or those supervising his work. We often find energetic young men losing their ambition when working under conditions that do not demand the exercise of their best powers.

More than once, I have observed that a *real* boss and disciplinarian is the maker of *real* men. In other words, there is only one boss worthy of the name and he is one who demands respect and enforces discipline. A young man who finds himself working under a laggard would do well to look about him, until he finds a real boss, one who is rigid and severe in his requirements. On finding such a one, the worker can console himself that he is developing into a real man.

In respect to one's own personal efforts in development, there is nothing better that can be said than to quote the old rule of study and application. Solve a problem every day. For myself, I prefer the careful study of the questions and answers found in our coal-mining journals and textbooks. Such a study develops confidence in one's own capabilities.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Calculation of Efficiency in Fan Installation

Air Volume and Water Gage Determined by Measurement—Volume of Fan—Volumetric Efficiency—Manometric Efficiency—Power on the Air—Input and Mechanical Efficiency

KINDLY explain the necessary calculations involved in the correct solution of the following problem:

Careful measurement of the air current passing in an airway 11 ft. 4½ in. by 6 ft. 2 in., shows that the air travels at the rate of 1,243 ft. per min. The reading of the water gage at this point in the airway is 0.75 in. The fan producing the circulation is a 10 x 6 ft. double-inlet, Sirocco fan, operated as a blower and run at a speed of 86 r.p.m. The fan is driven by an electric motor belted to the fanwheel. The current is a three-phase system, having a power factor of 0.85, the input to the motor being 42 amp. under a pressure of 440 volts.

It is required to calculate (a) the volumetric efficiency; (b) the manometric efficiency; and (c) the overall efficiency of this installation. I shall greatly appreciate seeing the correct solution of this problem in *Coal Age*.

STUDENT.

Monaville, W. Va.

(a) The first step is to calculate the volume of air in circulation. The sectional area of the airway is $11.375 \times 6\frac{1}{2} = 70.146$ sq.ft.; and the volume of air passing is, therefore, $70.146 \times 1,243 =$ say 87,190 cu.ft. per min.

In order to determine the volumetric efficiency of the fan, it is necessary to first calculate its volume in cubic feet per minute. Running at a speed of 86 r.p.m., a fan 10 ft. in diameter and 6 ft. wide has a volumetric capacity of $6(0.7854 \times 10^2)86 = 40,526.6$ cu.ft. per min. The volumetric efficiency of this fan is, therefore, $(100 \times 40,526.6) \div 87,190 = 215$ per cent.

(b) The manometric efficiency of the fan is the ratio of the actual water gage observed in its operation, to the calculated theoretical water gage. The theoretical water gage of a fan is calculated by dividing the square of the tip speed in feet per second, by 2,233. At a speed of 86 r.p.m., the tip speed of a 10-ft. fan is $86(3,1416 \times 10) \div 60 =$ say 45 ft. per sec. The corresponding theoretical water gage is, therefore, $(45 \times 45) \div 2,233 = 0.906$ in. Finally, the manometric efficiency of this fan is $(100 \times 0.75) \div 0.906 = 82.7$ per cent.

(c) The mechanical overall efficiency is the ratio of the power on the air to the electrical input of the motor. The horsepower on the air is the product of the quantity of air in circulation (cu.ft. per min.) and the unit pressure (lb. per sq.ft.), divided by 33,000, which gives in this case $(87,190 \times 5.2 \times 0.75) \div 33,000 = 10.3$ hp.

Finally, an input of 42 amp. at a pressure of 440 volts is equivalent to $(42 \times 440) \div 746 = 24.77$ hp. For a power factor of 0.85, the effective input is $0.85 \times 24.77 = 21.05$ hp. The overall efficiency is then $(100 \times 10.3) \div 21.05 =$ say 49 per cent nearly.

Standard Wire Gauzes

American standard gauze for safety lamps determined by experiments of Sir Humphry Davy — Experiments of French engineers set up another standard used in some French lamps.

PLEASE explain, through the columns of *Coal Age*, how many openings to the square inch there are in the standard wire gauze used in safety lamps. My understanding has always been that the standard safety-lamp gauze has 784 openings to the square inch of mesh. Recently, some one has told me, or I have seen it stated somewhere, that there are 900 openings to the square inch in standard gauze. I am anxious to know which is correct.

Wheeling, W. Va. S. C. PRITCHARD.

The standard wire gauze used in practically all English and American lamps consists of a mesh of No. 28 B.w.g. steel wires. There are 28 of such wires to the inch, making $28 \times 28 = 784$ openings to the square inch of

mesh. This was adopted as the standard mesh for safety-lamp gauzes, as the result of protracted experiments by Sir Humphry Davy (1815).

Most of the wire gauze, used by safety-lamp manufacturers in this country, has been imported from England. The only other standard wire gauze, as far as our knowledge goes, is that adopted by two eminent French engineers, who investigated the subject in a series of careful experiments. The result was the adoption of a mesh containing 1,264 openings to the square inch, which is now used in some French lamps. We know of no standard safety-lamp gauze containing 900 openings to the square inch, although it is possible that such a gauze is manufactured by some company, today.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*Name the non-explosive gases found in lignite coal mines. Where are these gases found and how are they produced; what are their effects on health and combustion; and what is the most effective means of removing them?*

ANSWER—The gases generated in a lignite mine do not necessarily differ from those in bituminous mines. The non-explosive or extinctive gases found in coal mines are carbon dioxide (CO_2) and nitrogen (N_2). Carbon dioxide is found in poorly ventilated places and wherever combustion, in any form, is going on in the mine. It is produced by the explosion of powder, burning of lamps, breathing of men and animals and the slow combustion of coal in the gob.

Nitrogen is to be found in poorly ventilated places and is produced as the result of the depletion of the oxygen of the air through insufficient ventilation, the oxygen being absorbed by the coal or consumed by some form of combustion taking place in the mine.

The effect of these two gases on health is to produce headache, nausea, and final suffocation by excluding the oxygen of the air from the lungs, if the gas is present in sufficient quantity. Both of the gases being extinctive have the effect to dim or extinguish the flame of a lamp and retard combustion in any form.

The most effective means of removing these gases from the mine is to provide an ample circulation of air, sufficient to sweep them from their lurking places and carry them out of the mine.

QUESTION—*A shaft bottom* 18 *ft. wide and* 250 *ft. long is timbered with* 14 *x* 14 *in. cross-timbers, placed on* 2*-ft. centers. The roof is badly broken and there is a great deal of weight on the timbers, some of which are badly decayed. Describe in detail how you would direct the work of replacing these timbers, at the least expense, yet insuring the safety of the workmen.*

ANSWER—The timbers being 14 x 14 in. in section and placed 2 ft. apart, center to center, there is but 24 — 14 = 10 in. between the timber frames. It may be possible to wedge over one timber set four or five inches to make room for a new set of timbers to be put in place. If this can be done, the old set should then be removed, taking due precaution to avoid disturbing the loose material any more than necessary. There should now be room for standing another new timber set, before drawing a second set of old timbers.

If it is not possible to wedge over one of the old sets of timbers, as just mentioned, the work of standing the new timbers must be started at one end, or at some point where it is comparatively safe to remove an old set. It will be safer and often cheaper to stand a set of temporary timbers of smaller diameter between the old ones, supporting the collar or cross-beam by center posts, in order to hold the loose material in place while replacing the old set with a new timber frame. Such temporary sets must be set before withdrawing the old timbers.

QUESTION—*A slope is* 5,800 *ft. deep, dipping* 25 *per cent. The cable in use is a six-strand, nineteen-wire, steel cable,* $1\frac{1}{8}$ *in. in diameter. (a) What is the breaking strain on the cable when the load is at the bottom of the slope? (b) What safe load will this cable hoist on the given incline, allowing* 30 *lb. per ton of moving load for frictional resistance?*

ANSWER—(a) The breaking strain of a six-strand, nineteen-wire, steel hoisting rope, 1 in. in diameter is 34 tons. Then, since the strength of wire rope varies as the square of the diameter, the breaking strain of a similar rope $1\frac{1}{8}$ in. in diameter is $S = 34(1\frac{1}{8})^2 = 64.28$ tons.

The breaking strain of the rope is the same regardless of the position of the load on the incline. The safe working load, however, must be estimated when the load is at the foot of the incline, in order to make due allowance for the weight of the rope itself.

(b) The safe working strength of a steel hoisting rope may be taken, under ordinary conditions, as one-fifth of its breaking strain; or, in this case, $\frac{1}{5}(64.28 \times 2{,}000) = 25{,}712$ lb.

In estimating the total safe load including the weight of the rope, both the grade and track resistances must be taken into account. An allowance of 20 lb. per ton, for each per cent grade, makes the grade resistance $20 \times 25 = 500$ lb. per ton. To this, must be added the track resistance of 30 lb. per ton. The total resistance is, therefore, approximately, 530 lb., per ton of moving load. The total safe load, including the weight of the rope, then, is $25{,}712 \div 530 = 48.5$ tons.

A $1\frac{1}{8}$-in. wire rope weighs 3 lb. per running foot, which makes the total weight of this rope lying on the incline $(3 \times 5{,}800) \div 2{,}000 = 8.7$ tons. The net load hoisted is, therefore, 48.5 — 8.7 = say 40 tons.

QUESTION—*A slope mine has two intakes and one main return; where would be the best place to install a booster fan and how can I prove whether the return airway will be large enough to carry the increased quantity of air, before installing the booster?*

ANSWER—This is a fool question. Judging from the brief description given, the best place to install the booster would be on the junk heap. Better results in ventilation may be expected, in general, if the mine had one intake and two return airways. A single return airway would need to have a large sectional area to carry the air of two main intakes. Except under special conditions, a booster fan has no place in a mine.

QUESTION—*A shaft* 250 *ft. deep has been sunk to a gaseous coal seam. From the foot of the shaft, the main heading runs to the dip. This heading has been driven* 200 *ft. in advance of the last cut-through, where the entry is dipping* 14 *per cent. How and where would you test for firedamp; or where would you expect to find the gas in largest quantity?*

ANSWER—The question gives no information regarding the character of the workings. It is natural to assume that the gas, in this case, is generated at the face of the dip workings and, mixing with the air current, is carried by the return airway to the foot of the upcast shaft where it passes out of the mine. If the circulation is insufficient to properly ventilate the workings, a firedamp mixture will accumulate in cavities of the roof and in any void places in the workings. All such places should be carefully tested in the expectation of finding gas accumulated therein. Tests for gas must be made at the roof of all entries and rooms and in all live workings that are being driven to the rise.

QUESTION—*A pump discharges* 340 *gallons of water per minute and has a capacity of* 3.4 *gal. per stroke; how many revolutions per minute will a single-acting pump have to make, under these conditions?*

ANSWER—A single-acting pump discharges only on each alternate stroke, or but once during a revolution. Therefore, the speed of the pump in this case is $340 \div 3.4 = 100$ r.p.m.

Spens Outlines Work as Federal Fuel Distributor in Report Accompanying His Resignation

In formally transmitting to the President his resignation as Federal Fuel Distributor, which became effective Jan. 1, C. E. Spens presented a brief report on the work of the emergency office, which was established Sept. 22, after the conclusion of the coal strikes.

F. R. Wadleigh has been designated by the President to succeed C. E. Spens as federal fuel distributor. Mr. Wadleigh has been chief lieutenant to Mr. Spens throughout Mr. Spens' administration. He also is continuing to fill the position of chief of the coal commodity division of the Department of Commerce.

"On account of the greatly decreased production of coal, due to the miners' strike, which lasted approximately five months," says the report, "our first act was to apprise the public of conditions and to urge upon consumers—industrial and domestic—to confine their purchases to current requirements, that there might be no distress, until such time as increased production would permit of reserves. An inquiry also was directed to the Governors of all the states as to their local conditions and to ascertain whether or not federal assistance was necessary or desired. The replies indicated there was little, if any, cause for anxiety in any of the states west of the Mississippi River, excepting as to Minnesota, North Dakota and South Dakota. In most of the territory east of the Mississippi River the situation appeared to be quite serious.

Two Advisory Committees Appointed

"Two committees were appointed to assist the Federal Fuel Distributor—one designated as the Advisory Committee on Industry and the other as Advisory Committee on Transportation.

"On Sept. 27, regulations were issued and served on all coal producers, providing for daily information as to shipments and prices charged on each class of coal shipped. These regulations, due to the improved conditions, were withdrawn on Dec. 1.

"At a conference on Oct. 5 with the Advisory Committee on Transportation, specific recommendations were agreed upon and issued by that committee to all carriers as to the different requirements necessary to meet the situation. These recommendations contemplated, among other things, that all railroad material, including railroad fuel in coal cars, was to be promptly unloaded; that all maintenance and construction work requiring use of power and cars should be discontinued in so far as practicable, that this equipment might be turned into commercial service; that a vigorous campaign should be inaugurated to reduce to a minimum the number of locomotives and cars awaiting repairs, and that there should be an organized effort to check delays in transit or at terminals of cars loaded with coal as well as empty coal cars returning to the mines.

"There has been a continuous decline in the percentage of cars in bad order—the reduction from Sept. 1 to Dec. 1 being 4.3 per cent.

"Production is now approximately 11,000,000 tons per week, although during November in particular, there was an unusually large number of holidays at the mines.

"It is estimated that the current consumption is from 8,500,000 to 9,000,000 tons per week. A census taken at our direction by the U. S. Geological Survey and the Census Bureau, Department of Commerce, indicated that the amount of bituminous coal in storage on Sept. 1 was 22,000,000, which had increased to 28,000,000 on Oct. 1, and our best estimate is that on Nov. 1 the amount had grown to 35,000,000 tons and at least to 40,000,000 by Dec. 1.

"That the carriers co-operated to the fullest extent is evidenced by the increased production, when consideration is given to the fact that they themselves were still suffering from the ravages of the shopmen's strike, and the further fact that during this period offerings of tonnage of all character were extremely large. A glance at the following figures, which represent the number of carloads of revenue freight loaded for each week specified, during this fall, as compared with similar periods in 1921 and 1920, show that the total loading in 1922 was considerably in excess of that for 1921, and, in a number of instances, greater in 1922 than in 1920. The week ended Oct. 14, 1920, was the heaviest week in the history of the railroads, viz.: 1,018,539 carloads, but for the week ended Oct. 28, 1922, the loading was 1,014,480 carloads, or only about 4,000 cars less than the 'peak' week:

Week Ending	1922	1921	1920
September 16	945,919	852,552	991,166
September 23	973,291	873,641	1,008,109
September 30	988,381	904,831	992,283
October 7	968,169	899,681	1,011,666
October 14	983,470	910,529	1,018,539
October 21	1,003,759	964,811	1,008,818
October 28	1,014,480	951,384	981,242
November 4	994,827	837,576	915,612
November 11	953,909	755,777	927,586
November 18	969,094	790,363	889,138
November 25	955,495	673,465	803,701
December 2	845,219	741,849	882,604

"The bituminous production in 1921 was 415,000,000 tons. The production in 1922 up to and including Dec. 16 was 387,152,040 tons, so that the production during 1922 will nearly equal that in 1921, despite the strike this year that lasted nearly five months.

"As to priorities in transportation, as contemplated in the act, the instances where we have recommended issue of individual priorities have been comparatively few. Where applications for priorities have been received, we have endeavored to take care of such instances by increased car supply and by co-operation with shippers. Individual priorities are undesirable, creating as they usually do, discriminations and often merely resulting in the transfer of cause for similar applications to other localities.

"In the matter of prices on bituminous coal, practically all complaints received have been confined to prepared sizes for household use, and in consequence our efforts as to prices have been largely confined to domestic coals.

"Numerous conferences were held with the operators in the various districts with the following results: In the Pocahontas district, New River district, Tug River and Winding Gulf districts of West Virginia the operators voluntarily expressed a willingness to maintain a maximum price, f.o.b. mines, that constituted a reduction in the previous maximum price of approximately $3 per ton; in Alabama, $1 per ton; in the Pittsburgh (Pa.) district, $1.50 per ton; southern districts of Ohio, $2.25 per ton; in Pittsburgh No. 8 Ohio district, $1.50 per ton; in the Fairmont (W. Va.) district, $1.25 per ton; and in the Fifth and Ninth districts in Illinois, $1 per ton. The reductions in these districts automatically resulted in similar reductions in competitive fields, and in other districts increased production has had a similar effect.

"We have in no instance attempted arbitrarily to fix specific prices, all the reductions referred to having been made voluntarily by the operators, at our instance and request.

"The following figures, taken from *Coal Age*, give a comparison of the weekly average spot prices of bituminous coal, f.o.b. mines, for the week ended Sept. 11 up to and including the week ended Dec. 11, as compared with the months of September, October and November, 1920. Production and demand in 1920 were abnormally large:

WEEKLY		WEEKLY	
September 5	$5.08	November 20	$4.15
September 11	5.17	November 27	3.99
September 18	4.99	December 4	3.95
September 25	5.06	December 11	4.07
October 2	4.89		
October 9	4.60	MONTHLY	
October 16	4.45		1920
October 23	4.26	September	$8.52
October 30	4.19	October	7.78
November 6	4.16	November	5.87
November 13	4.12	December	4.38

"In the matter of bituminous coal loaded into vessels at

Lake Erie ports, this season's tonnage of cargo coal amounted to 18,501,055 tons; in 1921, 22,412,380 tons; in 1920, 22,408,355 tons. In addition, the amount of bituminous coal on hand on commercial docks at Upper Lake Ports (Lake Superior and Lake Michigan, not including Chicago) was 4,300,744 tons on April 1, 1922; 2,053,022 tons on April 1, 1921, and 860,521 tons on April 1, 1920. There were about 2,000,000 tons more of bituminous coal on hand on these commercial docks on April 1, 1922, than on April 1, 1921, and more than 3,000,000 in excess of that on hand April 1, 1920.

"Due to the miners' strike the shipment of lake coal was necessarily largely concentrated within the period Sept. 11 to Dec. 1. During the twelve weeks ended with Dec. 4, this year, the average weekly loading into vessels amounted to 1,012,664 at Lake Erie ports as compared with an average weekly loading of 477,945 tons for the same period in 1921.

"The movement of soft coal from Illinois and Indiana and other districts this season also has been far in excess of that during last year, so that the northern districts served principally by the lakes are in a satisfactory condition in so far as bituminous coal is concerned. The distribution of 'lake' coal as between the various ports this season has followed very closely the percentage distribution that obtained during the previous years.

"Due to the miners' strike, it has been estimated that the production of anthracite this season—that is, from the date the strike ended, Sept. 11, up to April 1, 1923—will not exceed 60 per cent of last year's production, and the plan of distribution of this season's production contemplates a prorata distribution among last year's consuming communities. The following figures indicate the trend of weekly production since the week ended with Sept. 9 as compared with similar period in 1921:

	1922	1921
September 9	50,000	1,483,000
September 16	1,107,000	1,749,000
September 23	1,863,000	1,725,000
September 30	1,947,000	1,802,000
October 7	1,959,000	1,764,000
October 14	2,075,000	1,813,000
October 21	2,003,000	1,910,000
October 28	1,804,000	1,751,000
November 4	1,839,000	1,689,000
November 11	1,863,000	1,350,000
November 18	2,191,000	1,879,000
November 25	2,174,000	1,650,000
December 2	1,819,000	1,815,000
December 9	2,038,000	1,675,000
December 16	2,200,000	1,637,000

"In terms of cars, the loading this season as compared with 1921 and 1920, is as follows:

	1920	1921	1922
Average daily loading' October	5,910	5,853	6,049
Average daily loading, November	5,447	5,327	5,919

"Up to and including the 19th of this month, the average daily loading for December, 1922, was 6,196 cars.

"The lake anthracite program contemplated a movement of about 2,000,000 tons. Lake navigation closed with approximately a movement of only 1,250,000 tons, a shortage in this program of 750,000 tons, which deficit, it is planned, will be equalized by all-rail movement, and which movement is now under way.

"Canada's current allotment of 1,300,000 tons would represent about 4 per cent of the total production. During the calendar year 1921 the total shipments of domestic anthracite amounted to 51,916,578 tons, of which Canada received 3,920,000 tons, or 7.55 per cent.

"In the matter of prices on anthracite, the Commonwealth of Pennsylvania appointed a Fair Practices Committee, reporting to the Pennsylvania Fuel Commission, to fix maximum prices, f.o.b. at the mines. This committee has practically completed its work; prices on approximately 99 per cent of the production have been established, which maximum prices range from $8.50 to $12 per ton, dependent upon cost of production.

"Throughout our service we have enjoyed the most sincere co-operation on the part of the Interstate Commerce Commission, State Fuel Administrators, railroads and also a large majority of the coal operators. In no instance have we found it necessary to invoke the penalties provided in the act.

"The bituminous situation generally is in good shape. Complaints continue of shortage in car supply, but there are few complaints of current shortage of bituminous coal. There is, however, a demand by industry, particularly public service corporations, in certain sections, for greater opportunity to increase reserves, due to a large extent to anticipated possible renewal of labor troubles this coming spring.

"With the seasonal reduction in other traffic, which this year, however, has been greatly retarded, additional power should be released for the transportation of coal, and while this power generally is not yet up to standard due to the shopmen's strike, barring extreme weather, which, of course, would further affect the railroads' capacity, we are hopeful that the situation may be cared for without serious distress. Difficult weather might result quite seriously.

"The clamor for anthracite is quite urgent. We have repeatedly advised the public of the situation with regard to this commodity, that they might provide themselves, to some extent, with substitutes. The current production is, however, so satisfactory that, barring unexpected difficulties, we believe the available supply will somewhat exceed the earlier expectations.

"Of the amount appropriated by Congress for the purpose of this act, approximately $40,000 will have been expended for the period Sept. 22, the date the law became effective, until Jan. 1, 1923."

Operators Within Rights in Draining Mine Water Into Indian Creek, Judge Holds

In an opinion covering nearly 100 typewritten pages handed down last week Judge J. Q. Swearingen, in the Common Pleas Court of Fayette County, Pennsylvania, denied an injunction sought by the Mountain Water Supply Co., the Dunbar Water Co. and the Pennsylvania Railroad Co. to restrain twenty-nine coal operators in the Indian Creek Valley from draining sulphuric acid-laden water into Indian Creek, thereby contaminating the water supply of the plaintiff companies.

The court held that the mine owners could permit the water from mines to flow by gravity into Indian Creek when that stream provided the natural drainage for the watershed and that it is incumbent upon the water companies to receive the water as it flows into the creek and into the storage reservoir of the plaintiffs and purify it for whatever use it is intended.

The decision is the conclusion of the first phase of the battle between the Pennsylvania Railroad Co. and its subsidiary water companies on one side and the coal operators on the other.

The case will be appealed to the higher courts. This has been the understanding from the beginning of the litigation.

Ford Buys Pond Creek Coal Property

The Ford Motor Co. has purchased the coal lands, mining plant and equipment of the Pond Creek Coal Co., situated in Pike County, Kentucky, according to an announcement Dec. 28 by T. B. Davis, president of the latter company. The purchase price was not announced, but Mr. Davis estimated that upon final liquidation the net worth of the present company would approximate $45 a share. There are 212,920 shares of common stock, which would make a valuation of about $9,581,400. The Pond Creek company is a producer of soft coal, in a non-union mining field.

Henry Ford had an option to purchase the Elkhorn coal properties in eastern Kentucky which he failed to exercise. It expired Dec. 22.

Howat Ticket Wins in Kansas

The Howat ticket headed by William Bogartz for president, won in the recent election in District 14, United Mine Workers, the official recount now shows. The new officers have assumed office, thus raising the Howat question formidably again in Kansas. Alexander Howat, now in prison for violating orders of the Kansas Industrial Court, was ousted from the district presidency by the International nearly two years ago for calling an unauthorized strike.

Miners' Nationalization Committee Submits Plan for Public Ownership and Operation of Coal Industry

"A plan of public ownership, public control and democratic management of the coal industry," prepared by the Nationalization Research Committee of the United Mine Workers, was made public Dec. 29 by C. J. Golden, president of District 9 and chairman of the committee, at a dinner of the League for Industrial Democracy, at the Aldine Club, New York City. The miners' union created the Nationalization Research Committee at the international biennial convention of 1921 to study nationalization of mines and the plan is the result of eight months' work by the committee.

The scheme, which is embodied in a brochure entitled "How to Run Coal," placed a valuation on the soft-coal industry—based on operators' and government estimates—of between $1,500,000,000 and $2,000,000,000. This, they pointed out, was a little more than the selling price of soft coal at the mines for 1921.

The estimate of capital investment in the anthracite fields was given as $432,000,000, the federal census figures, and the value of royalty payments on coal in the ground in which operators have made investments was placed at $2,000,000,000. So the miners estimate the total cost of the government taking over the coal fields as $4,500,000,000.

The miners propose as the basis of an organization for operating the mines and fixing prices a Federal Interstate Commission of Mines, at the head of which would be a Secretary of Mines with a place in the Cabinet. This commission would be appointed partly by professional and industrial associations and partly by the President. It would include fact finding, scientific determination of costs, price fixing and other similar duties.

The work of administration, of actual operation, would be done by a National Mining Council, composed of three groups representing the financial, technical and administrative heads of the industry; the miners and the coal consumers. They would be appointed by the federal commission from the nominations made by the groups represented.

Wages would be made a first charge upon the industry, with a national basic wage as a foundation for determination. There would be differentials for risk, skill and local conditions, the determination to be not on "class warfare" but on measurement of skill and efficiency.

The plan frankly states that a political labor party, which would protect the interests of the miners by bringing political influence to bear on government commissions, is essential to the success of the plan, inasmuch as the representatives of the people designated to decide problems of control and expenditure probably would at present be unsympathetic to labor.

The plan, which the committee calls the American plan, has the following preamble of justification:

"The coal industry has been so disorganized and mismanaged that the situation in recent years has approached what big business men and stand-pat Senators describe as a 'catastrophe.' Intelligent men, with the welfare of the industry at heart, agree that the 'game is up'—the old game of speculative profits, overproduction, shortages, sky-high prices, unemployment, gunmen, spies, the murder of miners, a sullen, desperate public. Unless unification and order enter the industry, there will be a blow-up somewhere, followed by drastic, angry and frenzied legislation. The American Kingdom of Coal is today in as chaotic and explosive condition as the States of Europe. No single constructive suggestion has come from the operators. No large leading idea has come from the public. The public is feeling intensely, but is not yet thinking wisely.

"The operators have a fresh explanation for the annual crisis as often as it rolls around. One year it is car shortage, another year, high wages, then the war, then government interference. Of thought-out plan and remedy they have offered none.

"The only large-scale proposal has come from the United Mine Workers of America in their demand for nationalization. It is the only proposal that grapples with slack work for the miners, high prices and irregular supply for the consumers. It is now the job of the miners to decide what kind of nationalization they want. There are only three plans possible for control and administration. All other plans are minor variations on those three. There are only three plans possible, because, after the owners are bought out, only three interests are concerned—the public, the miners and the technical and managerial group. The plans differ in the proportion of power they give to each of the three interests."

Any plan must not only provide a decent American standard of living to the worker, but must satisfy his desire for a voice in the management, said the proposal. Some gains, such as control over the rate of pay, qualifications, hours, inspection and other details, have been won by the union.

"But these gains are not enough for a worker in a democratically managed industry," said the plan. "He wishes the right to make suggestions on technical improvements, on car-pushing, on slack work, on output and the right to take part in carrying them out. There will be no complete co-operation until his suggestions are welcomed and weighed. His good-will and intelligence should be encouraged. They must be incorporated in any successful scheme of administration. The working miner must have a real part in the government of coal. Democratic management is what the worker wants.

"But any plan of nationalization must also include ownership by the public. Ownership of the mines by the miners alone would be as unjust and as disastrous as ownership by the coal operators has proved itelf to be. The public must give the final decision on the large issues of the industry.

Would Separate Control from Administration

"Any plan of nationalization must include the separation of control from administration. The decision of policy is one thing. The job of administration, that is, running the industry, is quite a different thing. To give control to the community as a whole, to safeguard the future as well as the present, to practice the American policy of conservation equally with that of business initiative—all this is in the job of control. Control means to know what is actually being done as well as to know what must be done to get results and to order the thing to be done. Control means statistics of output, requirements, stocks; it means tests, inspections, research, publicity; it means the collection of all the necessary new and now unknown facts about the industry.

"Under public ownership and democratic administration the coal industry will find out how much coal the people want, how much of a supply is already in stock, what is the cost of mining coal, how much pay a miner gets, and what the correct price is for a ton of coal. These are simple, easy, fundamental and essential facts in running an industry. But not one of these elementary facts is known today.

"A permanent fact-finding agency will be one of the instruments of control. Control means a permanent federal interstate commission of mines, and the eyes of the commission will be a fact-finding agency, with uniform accounting and a research group. At the head is the Secretary of Mines, a Cabinet member. This federal commission will be created by Congress and composed of at least eleven members. Five of these members should be named by such bodies as the professional and industrial associations (engineers, &c.). The other six members will be appointed by the President. The functions of this federal commission include fact finding, scientific costing, budget determination, price fixing, research. A scientific budget is essential to the success of this plan."

The Federal Commission on Mines would control the finances of mining under the plan, and the National Mining

Council, representing the operation body, would present to the commission its receipts, expenses, salaries, wages, costs, plans for development and prices.

"Any plan of nationalization must arrange for the determination of price, quality and quantity of output by the whole community, and not by the group, of workers," said the plan. "This means that the Federal Commission on Mines and the Secretary of Mines will have the final say on these matters. That will be the public safeguard."

The Bureau of Wage Measurement would be a part of the federal commission, which will pass upon the findings of the bureau "from the point of view of business expediency and economic feasibility. The Bureau of Wage Measurement will deal scientifically with the disputed points in rate fixing, such as dead work, for which no satisfactory standardized rate has been worked out.

"Wages will be made the first charge against the industry. A good American life for the miner will be regarded as of equal importance with a steady supply of coal at a reasonable price to the public. For the first time in the history of the industry, disputed wage questions will be removed from the administration of the industry, where they do not belong, and placed under the economic control of the industry, where they do belong. The mine manager will be able to turn his face away from the business office and direct his full attention to the getting out of coal. In the past the 'good' manager has too often been forced to be a labor 'squeezer,' cutting rates to prove his efficiency. The good manager of the future will be ranked by his skill in coal production and in the sound organization of work. Administrators, instead of wage haggling and market juggling, will administer."

Plan Would Maintain Collective Bargaining

The principle of collective bargaining would be maintained under the nationalization plan, which holds that the union must be safeguarded as much as under private ownership.

"The United Mine Workers of America under nationalization will not only participate in administration, but must in addition maintain its own life and integrity as 'an independent organization of initiative and defense,'" says the statement. "It must be in a position to discuss wages through the Wage Scale Committee, an independent joint conference board. This is the same right which workers under consumers' co-operation enjoy."

This was in substance the outline of the plan for nationalization as put forward by the miners. It was given "not as a final plan but as something round which the miners may build their own program and as a focus for the thinking of the public." It pointed out that "the coal industry is so dependent on transportation that the miners' program is one with the program of the railroad workers for nationalization of the railroads."

Joined to the plan was a second section, entitled "A Warning," which contained the miners' reasons for putting forward their plan. It said:

"The present private control of coal is doomed. Plans for reorganization are already being pushed by the press, President Underwood of the Erie Railroad and many others. This is a dangerous time for miners. The miners must do their own thinking and do it quickly. They must beware of specious plans in place of sound plans. When the miners offered to the House Committee the suggestion for an emergency investigating commission with a joint representation of the industry, miners and operators, the operators responded with a substitute—a commission from which miners were barred. When the miners urged a federal fact-finding agency, permanent and compulsory, the business interests answered with various schemes for governmental regulation, or for trustification.

"The conditions of success for nationalization are these:

"1. Administrative organizing minds in the public service.

"2. A competent technical staff.

"3. A 100 per cent organized union.

"4. Collective bargaining publicity accepted as the basis of wage agreements.

"5. A large labor representation in all departments of government.

"6. A political labor party.

"Confiscation, in any form, is of course unthinkable. All those holding an investment in mines, equipment, and coal beds will be recompensed at a just figure. The first steps will be taken by the Federal Fact-Finding Agency, the Bureau of Statistics, in listing the plants, and in making a list of the owners of the coal beds. That register is an immediate need, regardless of nationalization. Then follows the task of a valuation of the coal beds. The government has used up several years in valuing railroad properties. We suggest as the principle for appraising the value of coal the principle of established expectations. This means that the nation buys up the established expectations of the owners of the coal beds. It gives compensation for the disturbance of established expectations of being able to draw an income. With established expectations as the principle of purchase, the work of valuating is simplified.

"For the British coal industry, it was estimated by Sidney Webb that between two and three hundred million pounds would meet all demands. That would be from a billion to a billion and a half dollars. This estimate included coal and collieries, royalties, and every form of stock holding.

"Four and a half billion dollars for the coal industry and the coal of the United States is a liberal estimate."

Analysis of Railroad Performance Expected To Result in More Efficient Service

Railroad performance in the handling of coal since the close of the strike has been studied and analyzed more carefully than ever before. The conclusions which are being reached do not reflect credit on the railroads. When the figures are all compiled, it is believed they will prove conclusively that railroading efficiency is very low.

These figures also will show, it is believed, that in addition to the poor handling of cars the principal causes of transportation deficiencies will be found in the lack of motive power and in the inadequacy of terminal facilities. The railroads have enough open-top cars actually engaged in the transportation of coal to move the entire requirements of the country if each car will average thirteen trips a year. It is believed that even a better movement is within the range of good management. At present the average railroad car in service is twenty days under load and 2.2 days in movement, but it is earning revenue during only 1.5 days.

This year's careful scrutiny of transportation conditions will develop, it is believed, that bottle-neck and expensive terminals must give way to expanded facilities and the sale of high-priced, close-in terminals. In many cities the land occupied by terminals can be sold for very high prices. Terminals can be located on cheap outlying land with better facilities for the spotting of cars where they are available to motor trucks.

I. C. C. Issues Service Order 32

Service Order No. 32 has been issued by the Interstate Commerce Commission to insure further supplies of coal for the Government Fuel Yard at Washington. The Chesapeake & Ohio R.R. has been ordered to assign cars at the rate of five per day for ten consecutive working days to the mine of the E. E. White Coal Co. at Glen White, W. Va.; to the mine of the same company at Stotesbury, W. Va.; to the mine of the East Gulf Coal Co., at Helen, W. Va., and to the mine of the White Oak Coal Co., at Sprague, W. Va.

The Pennsylvania R.R. is instructed to assign five cars per day for five consecutive working days to the Arrow No. 5 mine of the Arrow Coal Mining Co. at Reitz, Pa.; six cars per day for ten consecutive working days to the mine of the Emerson & Morgan Coal Mining Corporation at Hagevo, Pa.

The Baltimore & Ohio R.R. has been directed to assign two cars per day for ten consecutive working days to the Big Chief Mine of the Sagamore Coal Co., Indian Head, Pa., on the Indian Creek Valley R.R.

Publication of Facts as Obtained by Coal Commission An Important Work in Public Education

By Paul Wooton
Washington Correspondent of *Coal Age*

While it is confidently expected that the President's Coal Commission will make available considerable quantities of facts which may be used in the wage negotiations, it is pointed out that the Jan. 15 report need not be the only revelation of facts which can be used by the wage-scale committees.

Both operators and mine workers apparently have been convinced that the commission does not expect to undertake mediation. Since the entire responsibility in the negotiation of wages is left to those immediately concerned, those who are engaged in the task, many believe, have a right to expect such assistance as the commission can give by making available in installments such facts as the commission is gathering. The situation is one which needs all the light that can be thrown on it.

In addition to contributing authoritative data to those conducting the wage conferences, the success of the commission's work depends to a great extent on the public support which may be given to its recommendations. If the commission withholds its facts and submits ultimately a long and voluminous report, the public will not be inclined to attempt to digest it. In the opinion of those who are particularly anxious to see the commission accomplish the maximum of good, the data on which its conclusions will be based should be submitted to the public piece by piece as fast as it comes to hand. Facts presented in this interim manner will be published widely and will be assimilated by the public. It will not only give Congress the benefit of the opinion which the public thus will form and make known but it will do an important work in public education. As it is, the public is surprisingly ignorant of the workings of the coal industry. So much of its prosperity depends on the proper functioning of the coal business that anything which makes it possible for the people to grasp the problems more knowingly, will do a service to the nation.

Insufficient Cost Forms Supplied

Regardless of who may be to blame, a bad psychological effect has been created among the operators because sufficient cost forms were not immediately available. It has been difficult for the leaders among the operators to engender any great amount of enthusiasm among their associates in the matter of submitting this cost information. It has had the tendency to slow up the work at a time when basic information of this character is essential to the commission's progress.

Published statements to the effect that there is friction among the members of the Coal Commission and that the President may be called upon to decide between the disputants were denied categorically by Chairman Hammond on Dec. 30. He characterized the statements as "imagination" and "romance." He declared that while there are frequent occasions where the opinions of the members of the commission do not coincide, there never has been a single discussion where even a semblance of heat was developed. As a matter of fact, Mr. Hammond stated, the discussions of the commission have been particularly free from anything other than the most friendly and earnest exchanges of views.

It has been stated that "one portion of the commission wants to abandon the questionnaire method." No such thought ever has been entertained, Mr. Hammond declared. The commission is unanimous in its belief that it must make use of the questionnaire method, as it is obviously impossible for comprehensive facts and figures to be gathered in a short time by any other means. He said the commission had been assured by members of Congress that it can get all the authority it needs to gather any information which is germane to the inquiry.

Chairman Hammond revealed at the Dec. 30 conference with the newspaper correspondents that thought is being given by the railroads and by the operators to reductions in freight rates and in the price of coal, respectively, during certain months with the idea of decreasing the seasonal character of the coal movement.

Professor Stoek, University of Illinois, the recognized authority on storage of bituminous coal, whose services as a consulting engineer in the U. S. Bureau of Mines are being utilized by the Coal Commission, was in Washington last week and was called into conference by the commission. He convinced the commission, it is reported, that the storage of bituminous coal is entirely practicable and that the danger of spontaneous combustion has been greatly exaggerated.

The Coal Commission's report to Congress of Jan. 15, according to definite statements of Mr. Hammond on Dec. 30, will not take up the questions of transportation, car shortage or the labor situation. He further indicated that the report will be final as far as it goes and that there will be no tentative discussion. It will contain facts on the coal industry, such facts as have been assembled so far by the staff of the commission.

The Jan. 15 report is but the forerunner of a series of statements that will be published by the commission. As an investigation is completed, results will be given to the public. Suggestions for legislation affecting the coal industry called for by the act creating the commission will not, however, be formulated prior to the final report of the commission next September.

Commerce Commission to Investigate Car And Motive-Power Equipment of Roads

The Interstate Commerce Commission began Dec. 7 a general investigation, under docket 14,489, of the adequacy of the car and motive-power supply of railroads and into the practices prevailing with respect to the interchange of cars. The inquiry has been instituted "with a view to promoting economical and efficient service, to prescribing and establishing such just and reasonable rules, regulations and practices with respect to car service, and to require the respondents to provide themselves with such safe and adequate locomotives and cars wherewith to perform as common carriers their car service as may upon such investigation appear to be contemplated and required by law." As a preliminary step the commission has by questionnaires called upon the carriers for the following information:

(a) Freight train cars owned or leased at the beginning and close of year 1922, and number ordered but not delivered Dec. 31, 1922.

(b) Estimated number of additional cars needed by classes, estimated cost thereof, proposed program for acquiring such cars and proposed plan of financing.

(c) Ages of cars in service by classes, Dec. 31, 1922, 100,000 lb. capacity and over.

(d) Ages of cars in service, 80,000 lb. and less than 100,000 lb. capacity.

(e) Ages of cars in service, 60,000 lb. and less than 80,000 capacity.

(f) Ages of cars in service less than 60,000 lb. capacity.

(g) Locomotives owned or leased at the beginning and close of year 1922 and number ordered but not delivered on Dec. 31, 1922.

(h) Unserviceable locomotives on line first of each month in 1922, by classes, and tractive power.

(i) Ages of locomotives at close of year 1922, by classes —freight, passenger, switch.

(j) Estimated number of additional locomotives needed,

proposed program for acquiring such equipment and proposed plan of financing the purchase thereof.

(k) Commodities loaded monthly, 1922, revenue freight—carloads.

(l) Carloads of non-revenue freight loaded monthly 1922.

(m) Freight cars on line daily, serviceable and unserviceable, by months in 1922, box, coal.

(n) Freight cars on line daily, serviceable and unserviceable, by months in 1922, refrigerator, flat.

(o) Freight cars on line daily, serviceable and unserviceable, by months in 1922, stock, all freight.

(p) Freight-car surplusages, daily averages by months, 1922, railroad owned cars.

(q) Freight-car shortages, daily averages by months, 1922, railroad owned cars.

(r) Freight-car surplusages, daily average by months, 1922, cars owned by private companies.

A questionnaire also has been directed to all private car lines requesting information concerning fraight-train cars owned or leased by them, and the number of such cars ordered, but not received.

All carriers by railroad subject to the interstate commerce act are made respondents. The Governor of each state, as well as the tribunal thereof, if any, having regulatory powers over the common carriers by railroad, have been notified of this proceeding. The times and places for hearings will be announced later.

Creation of Coal Commission Unanimously Approved, Council of Churches Finds

As the result of an inquiry conducted by the research department of the Federal Council of Churches during the last few weeks into the public attitude toward regulation of the coal industry, the council has made public its conclusions, based on interviews and detailed replies to specific questions received from employers, labor representatives, technicians, editors, educators and church leaders in various parts of the country, summarized as follows:

"(1) The demand for a full and authoritative statement of the facts is almost a wail. There is apparently unanimous approval of the government's action in creating the present commission. Even persons generally well informed who have lost no opportunity to read and observe, use such expressions as these: 'I am in a mist of perplexity'; 'There is so much doctored publicity'; 'The public finds itself quite without any dependable information'; 'No intelligent public opinion'; 'Complete lack of reliable information.' The editor of a great metropolitan paper which has given much space to the coal controversy complains that 'none of us has sufficient data yet on which to formulate a policy.' One of the ablest members of the American Federation of Labor executive committee writes: 'If there is any one thing in connection with the coal situation which impresses the thinking man, it is the absence of reliable and adequate knowledge.' Manifestly if the Coal Commission should not fill this need it would be distinctly disappointing to the general public.

"(2) Fear is expressed lest the commission may not pursue its inquiry to the full extent of the powers given it by Congress; that, specifically, it will not secure the facts concerning investment and profits. The law obviously contemplates that the commission shall utilize the data in the hands of the Federal Trade Commission and the Bureau of Internal Revenue and shall supplement this as necessary by direct testimony. It is likewise apparent that if the question of the relation of civil liberties to the control of the mining industry, with particular reference to portions of Pennsylvania and West Virginia, is not fully canvassed by the commission, there will be much dissatisfaction with its findings of fact. The public is apparently well aware now that the crux of this whole matter, in so far as the labor controversy is concerned, is the question whether the miners are to be allowed to unionize or are to be permanently arrayed against each other in competing union and non-union fields. Some persons recommend the latter alternative as a matter of public policy; others see justice only in the former.

"(3) There is a remarkably widespread conviction that what is wrong with the industry goes far deeper than those natural periodic conflicts of interest over wages and hours which arbitration might adjust. It seems to be generally recognized that because of overdevelopment and seasonal demand in the soft-coal industry some form of government regulation is necessary.

"(4) The replies indicate no organized public opinion in favor of government ownership or of full government control of the mines. It is felt, rightly or wrongly, that federal operation of the railroads was accompanied by waste and inefficiency, and that industrial progress in general demands as little federal interference as possible. There has been much talk of nationalization among the miners themselves, but official spokesmen for labor are by no means of one mind on the subject. There is on all hands fear that the machinery of government control would fall under political domination. Yet the coal situation so clearly constitutes an emergency that many people are thinking in terms of regulation through one or more federal agencies. The suggestions are for the most part not developed in detail, but the analogy of railroad regulation through the Interstate Commerce Commission has apparently impressed many people as instructive in this connection. Further, it appears likely that if the threatened strike takes place next spring, there will be a general demand for drastic action. 'I am against nationalization of any industry,' writes a well-known conservative editor, but adds that 'it may be that nationalization is the only cure for the troubles of the coal industry, and if the present commission so reports, I should certainly be inclined to a favorable consideration of its recommendation.'"

Berwind-White Mine Workers Worse Off Than Slaves, Says Report of Investigators

Miners employed in the Berwind-White Coal Co.'s mines have to endure living and working conditions "worse than the conditions of the slaves prior to the Civil War" according to the report of the committee appointed by Mayor Hylan, of New York City, to investigate labor conditions in the Berwind coal mines in Somerset and other counties of Pennsylvania which supply the Interborough Rapid Transit Co. with coal. This report, made public Jan. 1 by David Hirshfield, Commissioner of Accounts of New York City and chairman of the committee, urged that the government take over the coal fields and operate them for the "benefit of the people and place it beyond the possibility of any men or group of men to restrict coal production or its distribution."

The committee declared that E. J. Berwind, president of the Berwind-White company, as chairman of the Board of Directors of the Interborough, controlled the coal-supply policy of the transit company, which had made it possible for him "to purchase from his own company coal mined under unfair and heartbreaking conditions and reap therefrom enormous profits, amounting in 1921 to over $1,600,000, with corresponding financial detriment to the tax and rent payers in the City of New York."

Agreement on Four-State Wage Negotiation Expected in Chicago in Three Days

Chicago, Jan. 2.—Western operators were optimistic before the opening of the miner-operator conference in Chicago Wednesday that within three days both sides would have agreed to four-state negotiation with the idea of continuing the present wage scale one year. The possibility of an "unholy alliance" between operators of the outlying districts and the miners, on the ground that the miners would oppose the one-year plan and because the outliers would be bankrupted by a continuance of the present high wages was scouted by the best observers. Instead it was generally prophesied that a quick agreement upon four-state negotiation would be made and then that outlying districts would struggle in the negotiations for a variation in their scales so that they might meet non-union competition in 1923. The sub-committee on methods was scheduled to meet an hour before the main conference.

Hammond Appeal Urges Operators and Mine Workers At Chicago to Agree on Wage-Making Machinery

John Hays Hammond, chairman of the President's Coal Commission, addressed an appeal on Jan. 2 to the operators and mine workers assembled in Chicago to set up the machinery for wage-scale negotiations. In effect, he points out that the coal-consuming public is tired of living under the existing armistice between the operators and the mine workers. It wants peace. The inference of the appeal is that the people who burn coal look to the men who own the mines and to the men who work in mines to come to terms and to keep at work. It is not a private quarrel but a public issue.

It is significant that while the Coal Commission does not claim authority to negotiate or arbitrate it does mention in the opening sentence that it has a specific duty to investigate causes of strikes and in the last sentence it suggests that it will not hesitate to fix the blame if the mines are shut down on April 1. Were an impartial body like the Coal Commission to place the blame all admit the possibility that the public then would be likely to take into its own hands the matter of arbitrating the disputed points, without being invited by either side most immediately concerned. The text of Chairman Hammond's telegraphic appeal to operators and mine workers' committee follows:

"The United States Coal Commission respectfully calls your attention to the fact that among the subjects assigned to it by the Congress of the United States for investigation is that of the causes which from time to time induce strikes in the industry. There is sharp conflict in opinions expressed to the commission as to whether the cessation of work on April 1, 1922, in the unionized bituminous-coal fields of America was a strike by the miners or a lock-out by the operators.

"As the duly appointed representatives of operators and miners in the fifteen organized union districts, you have met for the purposes of finding a way to maintain peace in your fields. Failure to agree would create an intolerable situation. Such failure would inevitably result in most serious injury to the general business and common welfare of this country. All branches of the industry have promised this commission their co-operation in the discharge of its duties. The commission, therefore, in the public interest urges upon you the obvious necessity of promptly devising some plan whereby the mines affected by your conference will be kept in operation to the end that the revival of all industry be unchecked, the uninterrupted flow of commerce among the states be maintained, and the menace of an insufficient coal supply be averted.

"Business halts while in doubt as to your action, and awaits with anxiety the speedy and successful outcome of your labors! You can contribute to the peace of American economic life by reaching a speedy agreement and avoiding further conflict in the fields under your control. Your agreement will spare the commission the necessity of fixing the blame for failure to adjust your differences."

Development of German Mines Handicapped By Depth of Coal Deposits

BY H. C. HERZOG

Owing to the depths of the German coal deposits and the not over-flourishing condition of the mines, the development of German mine capacity has never gone far beyond actual needs, and cannot nearly be compared with conditions in countries where, as in the United States, the deposits are easily accessible. Apart from considerations of expense, which, especially in the Ruhr basin, always were a weighty matter, the coal syndicates which made it one of their chief tasks to prevent overproduction have exercised a strong restraining influence on development.

In pre-war times Germany had eight bituminous-coal producing districts: Rhineland-Westphalia, Upper Silesia, Lower Silesia, Hanover, Aix-la-Chapelle, Saxony, Sarre and Alsace-Lorraine. Two of them, Sarre and Alsace-Lorraine, have since then been alienated entirely and Upper Silesia in large part. The Ruhr district, which has always played a leading part in the German coal production, has now attained a position of predominance among the country's coal fields.

Of all mining districts the development of the mine capacity in Upper Silesia was furthest ahead of actual production, owing to such favorable conditions as comparatively shallow depths, abundance of timber and cheapness of labor. The intimate relation between the coal industry on the one hand and the metallurgical industry on the other hand in this district has further acted as a spur upon the development of the coal mines.

No authoritative figures are available on the relation between developed mine capacity and actual production in any district. Conditions in this respect are different in almost every mine. An average, it appears, has never been drawn. From various estimates it may be assumed that in 1913 the developed mine capacity in Upper Silesia was approximately 10 to 15 per cent and in the Ruhr district 5 to 10 per cent in excess of the highest annual production.

Since the outbreak of the war development has practically stopped. Seven new shafts, estimated to produce annually about 1,000,000 tons of coal each, have been sunk or are being sunk in the Ruhr district and two in Upper Silesia. None of them, however, has begun producing yet.

At present the developed mine capacity of Germany, excluding the Sarre district and Alsace-Lorraine, can, if the above estimates are correct, be assumed to be 190,000,000 tons per year, taking Upper Silesia as a whole, or from 150,000,000 to 155,000,000 tons after deducting the now Polish part of the Upper Silesian basin.

Actual coal consumption in 1913 of the territory embraced within Germany's present frontiers was 119,000,000 tons, or 75 per cent of the developed mine capacity. The various groups of consumers shared in this production in the following way: Railroads, 21.7 per cent; gas works, 11.1 per cent; electric plants, 6.8 per cent; shipping, 3.8 per cent; industry, 43.5 per cent; domestic fuel, agriculture and sundries, 13 per cent. On the strength of these figures it is seen that the excess of developed mine capacity over consumption is from 30,000,000 to 35,000,000 tons per year. Reparation coal amounts to approximately 20,000,000 tons per year, which explains the strained condition of the German coal situation today.

The total reserve of coal remaining to Germany has been calculated as follows, in millions of metric tons:

Depth in meters	0–1,200	1,200–1,500	1,500–2,000
Total Germany	104,711	67,695	106,496
Ruhr District	71,391	56,061	95,667
Upper Silesia	26,685	5,646	9,140
Lower Silesia	1,546	543	855

Under existing conditions only the strata down to 1,200 m., or at the utmost those to 1,500 m., are of any practical value. The lower levels must be considered as a reserve for the remote future. It is most unfortunate for Germany that through the alienation of Polish Upper Silesia a large part of the best accessible reserves has been lost to the country. The Upper Silesian reserves down to 1,200 m. level were calculated at 170,000,000,000 tons as compared with 71,391,000,000 tons in the Ruhr District. Taking into consideration the levels down to 1,200 m. only, the reserves are 104,711,000,000 tons, or 0.015 per cent of the developed mine capacity.

A SPECIAL MEETING of the Board of Directors of the National Coal Association has been called by President Ogle at the Waldorf-Astoria Hotel, in New York, on Jan. 16. The finance committee of the association will meet just prior to the session of the board.

Purchasing Agents to Issue Chart Showing Coal Consumption, Stocks and Output

A chart which will be both a "business barometer" and at the same time show the production and consumption of coal by industrial concerns in the United States and Canada will soon be issued by the National Association of Purchasing Agents. "The biggest and most important matter ever undertaken by any association" is the way Mark Kuehn, chairman of the fuel committee of the association, describes it. The chart will show three principal lines: A line of consumption, a line showing the coal on hand, and a line of production, which will be furnished by the U. S. Geological Survey. Forms have been sent to every member of the association, upon which each will be asked to make reports showing the amount of coal on hand on the first day of the month, the coal consumed during the month and the coal on hand the last day of the month. These reports are to be treated as confidential, but a tabulation of all reports will be printed each month in the monthly magazine of the association, the *Purchaser*, and will be mailed to each member.

Mr. Kuehn says that the membership of the association buys approximately 80 per cent of all coal consumed for commercial purposes and feels that the committee is in a position to undertake the problem and have a chart that is reliable. The chart, he feels, will prove a dependable business barometer.

The stock line will show the average days of supply on hand from month to month, says Mr. Kuehn, and will be indicative of the future.

The production figures or line will be furnished by the U. S. Geological Survey and will show what the mines are doing and give full information regarding the production of coal.

The first chart will be printed in the January number of the *Purchaser* and will show the lines of production, consumption and stocks for the months of October, November and December, reflecting the trend of business for that period. Thereafter the chart will go to the members regularly each month with a month's data added.

The form on which the members of the association have been asked to report the amount of coal consumed by the industry they represent follows:

Confidential

THE NATIONAL ASSOCIATION OF PURCHASING AGENTS

REPORT OF COAL SUPPLY OCT. 1, 1922

Dear Sir:

This statement will be held strictly confidential, only aggregate totals will be disclosed. Please mail your statement at once if possible. Use estimated weights if exact tonnage cannot be given.

Report only in *net tons*. Do *not* report in pounds.

Stock on hand Oct. 1, 1922 ..... net tons
Coal consumed during October ..... net tons
Stock on hand Oct. 31 ..... net tons
Coal consumed during November ..... net tons
Stock on hand Nov. 30 ..... net tons

.....
Name of Company.

.....
Name of P. A.

.....
City and State

This report mailed
.....
date

The fuel committee of the association has been active during the past year. Items of interest and data with definite information are regularly supplied from various sections of the United States and Canada by fuel counsellors, and furnished for the members through the *Purchaser*. The association took a leading part in the hand-to-mouth policy of buying coal adopted following the conference called by Secretary Hoover in Washington, thus augmenting the movement which the association already had under way.

Warriner Avers Shamokin and Mount Carmel Mines Are Working Full Time

Following a newspaper statement that miners are being deprived of the opportunity to work in the Shamokin and Mount Carmel districts of Pennsylvania, S. D. Warriner, president of the Lehigh Coal & Navigation Co. and chairman of the general policies committee of anthracite operators, sent the following letter to W. H. Woodin, State Fuel Administrator of New York:

"Any published accounts saying that miners are being deprived of the opportunity to work in the Shamokin and Mount Carmel districts, or in any other part of the Schuylkill region, are entirely untrue. Not only are the mines offering full time work but they are maintaining steady operation, in the Shamokin and Mount Carmel districts especially, under great difficulties due to the prolonged drought. Instead of keeping mines and miners idle, operators are hauling water in special tank trains from Sunbury to supply their boilers, this haul being from 20 to 30 miles, according to the situation of the mines.

"Published stories of great amounts of culm and 'dust' being sent out of the region are merely revivals of a hoary fabrication. For many years good coal has been reclaimed from culm banks, but there is less so recovered today than there was five years ago or four years ago, and the great bulk of it goes into steam consumption.

"Total coal shipments from the Schuylkill region—which includes the Shamokin and Mount Carmel districts—were a little more than 2,000,000 gross tons each in November. Of this total, almost 1,280,000 tons were domestic sizes. The remainder, a little less than 750,000 tons, comprised all the steam sizes shipped from that region, and this tonnage included more than 280,000 tons of buckwheat No. 1, available for domestic purposes when used in combination with larger sizes for steady burning or when used alone to bank household fires.

"Shipment figures to date for December indicate that output will be substantially the same as in November, so that the above figures on total tonnage and proportion of sizes apply to this month. For the entire anthracite territory, including Schuylkill, Lehigh and Wyoming regions, the percentage of domestic sizes shipped was 66 per cent. In November the domestic sizes were almost 68 per cent. For the region as a whole, therefore, the proportional shipments of small sizes are not increasing, but are showing a slight decrease.

"In short, there is no idleness of mines in the Schuylkill region through causes within control of the operators; there is no shortage of coal cars on the railroads serving that region; and there is not, nor has there been, any substantial variation in the proportion of sizes shipped to market."

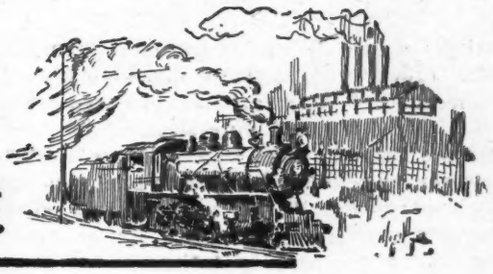
Lake Coal Loadings During Season of 1922*

(IN NET TONS)

Ports	Railroads	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total
Toledo	Hocking Valley	3,241,786	92,597	3,334,383	4,426.687	116,157	4,542,833	3,93,269	93,095	4.023,364
	Toledo & Ohio Central	860,814	27,965	888,779	1,106,251	32,319	1,138,570	1,729,894	65,695	1,795,589
	Baltimore & Ohio	2,912,587	77,864	2,990,451	2,561,015	78,085	2,639,100	1,619,875	44,804	1,664,679
Sandusky	Pennsylvania	2,794,264	99,730	2,893,994	1,853,148	52,138	1,905,286	1,604,305	26,542	1,630,847
Huron	Wheeling & Lake Erie	430,222	17,587	447,809	1,577,500	45,468	1,622,968	1,864,527	93,919	1,958,446
Lorain	Baltimore & Ohio	1,836,014	91,529	1,927,543	2,546,216	103,113	2,649,329	3,276,539	211,643	3,488,182
Cleveland	Pennsylvania	1,056,464	93,239	1,149,703	2,062,722	91,910	2,154,632	1,221,955	180,335	1,402,290
	Erie	381,903	14,464	396,367	359,981	12,782	372,763	437,653	19,234	456,887
Fairport	Baltimore & Ohio									
Ashtabula	New York Central	1,515,608	88,464	1,604,072	1,125,792	62,214	1,188,006	1,641,732	274,396	1,916,128
	Penhsylvania	1,674,618	90,038	1,764,656	2,300.210	78,097	2,378,307	1,942,021	101,706	2,043,727
Conneaut	Bessemer; Lake Erie	1,618,192	63,317	1,681,509	1,474,202	20,603	1,494,805	2,405,884	41,076	2,446,960
Erie	Pennsylvania	199,670	72,387	272,057	1,018,656	66,183	1,084,839	733,701	106,338	840,039
Totals		18,522,142	829,181	19,351,323	22,412,380	759,069	23,171,449	22,408,355	1,258,783	23,667,138

*Compiled by Ore & Coal Exchange, Cleveland Ohio; H. M. Griggs, Manager.

Production and the Market



Weekly Review

Holiday business has been surprising in its volume and coupled with the usual idleness of the men and the meager car supply has firmed up all prices. *Coal Age* Index of spot bituminous-coal prices stood at 369 on Jan. 2, as compared with 349 in the preceding week. This is the third consecutive week in which the index number has advanced, and prices have rallied to the level of Oct. 18, 1922. The average spot price, f.o.b. mines, corresponding to this week's index is $4.47; last week it was $4.23.

The holiday lull in production enabled the railroads to make inroads on their line congestion but empties are still very slow in returning to the mining fields. While the volume of demand did not increase last week, it was more apparent than ever because of reduced offerings and shows the urgency of the hand-to-mouth purchasing that has been the rule for so long. It is evident that reserves are so low that they do not permit the least relaxation of current purchases.

Only Steam Prices Rose in Middle West

The market ranges from comparative quiet in the Middle West to feverish activity in the North Atlantic section, although New England has not yet felt the urge to buy heavily at the high ruling quotations. Strangely enough, the steam coals were the only ones to increase in price last week in the Middle West, in spite of the fact that the domestic season is at its height and retail supplies far from topheavy.

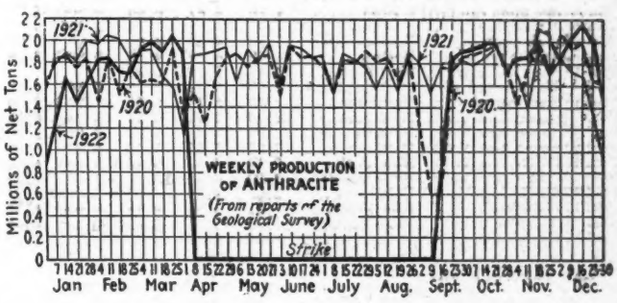
The Pittsburgh and Cincinnati markets are very firm. Smaller industries are actively seeking tonnage and iron and steel buying is improving. The eastern Ohio field is furnishing over 50 per cent of its output to the railroads and has little free coal to offer. Ohio coal is substituting for anthracite and Pocahontas, the latter being almost unobtainable.

Softer weather has eased the tension in the Northwest. Bituminous coal on the docks is largely under contract, but all-rail offerings are comfortably heavy. The market is basically weak and the weather determines the day-to-day demand.

Light receipts, steady industrial demand and the growing need of screened soft coal to offset the anthracite shortage has done the trick in the East. The market is tight all around, quality coals are no longer quoted and mediocre grades are eagerly sought. Those who must have immediate tonnage are fast bringing a bidders' market for the coal that is rolling.

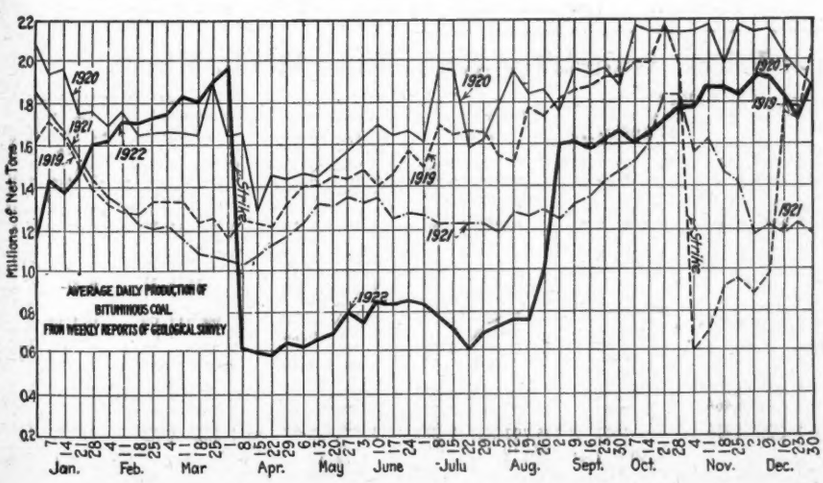
New England Reflects Conditions

The conditions are reflected in New England. Both coastwise and all-rail shippers have raised their prices but purchases are kept down by the reserves in hand.



The shortage of anthracite really determines the market; gas screened coals move at fancy figures and this excellent demand has reduced the available supply for industrial consumption.

Famine conditions in the anthracite market have put a heavy burden on the retailer. Practically every dealer has had some trouble in distributing receipts but



Estimates of Production

(Net Tons)

	1921	1922
BITUMINOUS		
Dec. 9	7,312,000	11,495,000
Dec. 16 (*b*)	7,063,000	10,666,000
Dec. 23 (*a*)	7,450,000	10,031,000
Daily average	1,242,000	1,672,000
Calendar year	399,111,000	397,631,000
Daily av. cal. yr.	1,329,000	1,318,000
ANTHRACITE		
Dec. 9	1,675,000	2,038,000
Dec. 16	1,637,000	2,197,000
Dec. 23	1,316,000	1,976,000
Calendar year	89,806,000	50,872,000
COKE		
Dec. 16 (*b*)	126,000	298,000
Dec. 23 (*a*)	117,000	280,000
Calendar year	5,403,000	7,769,000

(*a*) Subject to revision. (*b*) Revised from last report.

mainly because the coal is scattered in small lots. Substitute fuels are also scarce and high priced.

Independent operators obtain large premiums for quick shipments of family sizes. Little of this costly tonnage finds its way to the larger Eastern centers, however, as retailers hesitate to pass such figures along to the consumer. Steam coals are in good demand and there is no surplus tonnage. Prices have rallied to the level of company quotations.

BITUMINOUS

"The production of bituminous coal continued to decline in the week ended Dec. 23," says the weekly report of the Geological Survey. "The total estimated output, including coal coked at the mines, mine fuel and local sales, was 10,031,000 net tons. Increased traffic difficulties and interruptions caused by the occurrence of certain church holidays were largely responsible for the decrease.

"Preliminary reports of cars loaded during the first four days of last week (Dec. 25-30) indicate that production virtually ceased on Christmas Day. It is expected that the probable output will be between 10,500,000 and 10,700,000 net tons. Thus while the total output during Christmas week will be considerably less than that in the week before, the average daily rate of production moved upward considerably because of the less number of working days.

"The estimated cumulative production of bituminous coal during 1922 to Dec. 23 stood at 397,631,000 tons. Production during the first 301 working days of the past six years has been as follows, in net tons:

1917	530,535,000	1920	543,199,000
1918	571,530,000	1921	399,111,000
1919	446,650,000	1922	397,631,000

"Thus it is seen that from the viewpoint of bituminous coal production 1922 is 0.4 per cent behind 1921, 26.8 per cent behind 1920, 11 per cent behind 1919, 30.4 per cent behind 1918, and 25 per cent behind 1917.

"Receipts of coal in New England, according to reports from the Massachusetts Special Commission on Necessaries of Life, during the month of November were as follows:

	Tide (net tons)	Rail (net tons)	Total (net tons)
Anthracite	345,000	650,000	995,000
Bituminous	1,095,000	684,000	1,779,000

"Total receipts of anthracite for the first eleven months of 1922 were 5,470,000 tons, and of bituminous coal, 17,078,000 tons. During the corresponding period in 1921, total receipts were 10,520,000 and 15,716,000 tons of anthracite

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 2, 1922	Dec. 18, 1922	Dec. 26, 1922	Jan. 2, 1923†
Smokeless lump	Columbus	$3.55	$6.30	$6.30	$6.75@$7.75
Smokeless mine run	Columbus	2.15	6.00	6.00	6.50@ 6.75
Smokeless screenings	Columbus	1.65	5.50	5.50	5.25@ 6.25
Smokeless lump	Chicago	3.10	7.75	7.75	7.50@ 8.00
Smokeless mine run	Chicago	2.50	6.60	6.60	6.50@ 6.75
Smokeless lump	Cincinnati	3.25	7.00	6.75	6.00@ 8.00
Smokeless mine run	Cincinnati	2.05	5.80	6.25	6.00@ 6.50
Smokeless screenings	Cincinnati	1.55	5.30	6.10	6.00@ 6.50
*Smokeless mine run	Boston	4.70	7.85	8.60	8.50@ 8.75
Clearfield mine run	Boston	2.05	4.15	4.25	4.75@ 5.50
Cambria mine run	Boston	2.50	4.55	4.80	5.00@ 6.00
Somerset mine run	Boston	1.80	4.10	4.40	5.00@ 5.75
Pool 1 (Navy Standard)	New York	3.15	5.75	6.25	.....
Pool 1 (Navy Standard)	Philadelphia	3.00	5.35	5.50	5.50@ 6.10
Pool 1 (Navy Standard)	Baltimore	2.40	5.75	6.00	6.50@ 7.00
Pool 9 (Super. Low Vol.)	New York	2.35	5.15	5.35	5.50@ 6.00
Pool 9 (Super. Low Vol.)	Philadelphia	2.30	4.85	5.30	5.35@ 5.75
Pool 9 (Super. Low Vol.)	Baltimore	2.20	5.05	5.10	5.50@ 6.00
Pool 10 (H.Gr.Low Vol.)	New York	2.10	4.50	5.10	5.50@ 6.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	2.00	4.15	4.85	5.00@ 5.25
Pool 10 (H.Gr.Low Vol.)	Baltimore	2.00	4.55	4.60	*4.25@ 4.75*
Pool 11 (Low Vol.)	New York	1.65	3.50	4.15	4.00@ 5.00
Pool 11 (Low Vol.)	Philadelphia	1.70	3.55	4.45	4.65@ 4.90
Pool 11 (Low Vol.)	Baltimore	1.75	4.10	4.10	4.25@ 4.50
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	3.20	3.55	.....
Pool 54-64 (Gas and St.)	Philadelphia	1.55	3.35	.....	4.00@ 4.25
Pool 54-64 (Gas and St.)	Baltimore	1.45	3.85	3.85	3.75@ 4.00
Pittsburgh sc'd gas	Pittsburgh	2.65	5.25	5.25	5.00@ 5.50
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.60	3.10	3.00@ 3.50
Pittsburgh slack (Gas)	Pittsburgh	1.80	3.25	3.00	3.00@ 3.50
Kanawha lump	Columbus	2.80	5.35	5.25	5.50@ 6.00
Kanawha mine run	Columbus	1.85	3.00	3.10	3.25@ 3.50
Kanawha screenings	Columbus	1.40	2.80	2.85	3.00@ 3.25
W. Va. lump	Cincinnati	2.75	6.25	6.25	6.00@ 7.00
W. Va. Gas mine run	Cincinnati	1.45	3.35	3.75	3.50@ 4.00
W. Va. Steam mine run	Cincinnati	.....	3.10	3.35	3.50@ 3.75
W. Va. screenings	Cincinnati	1.25	3.00	3.10	3.25@ 3.50
Hocking lump	Columbus	3.00	5.15	5.25	5.00@ 5.50
Hocking mine run	Columbus	1.90	2.60	2.85	3.00@ 3.25
Hocking screenings	Columbus	1.40	2.55	2.60	2.75@ 3.00
Pitts. No. 8 lump	Cleveland	3.05	4.35	4.75	4.75@ 5.50
Pitts. No. 8 mine run	Cleveland	$2.00	$3.20	$3.25	$3.40@$3.50
Pitts. No. 8 screenings	Cleveland	1.95	3.05	3.10	3.25@ 3.35
Midwest					
Franklin, Ill. lump	Chicago	3.80	5.25	5.35	5.25@ 5.50
Franklin, Ill. mine run	Chicago	2.90	4.10	4.10	4.00@ 4.25
Franklin, Ill. screenings	Chicago	2.10	2.70	3.10	2.75@ 3.50
Central, Ill. lump	Chicago	3.10	4.25	4.35	4.25@ 4.50
Central, Ill. mine run	Chicago	2.50	3.10	3.10	3.00@ 3.25
Central, Ill. screenings	Chicago	1.90	2.00	2.20	2.25@ 2.40
Ind. 4th Vein lump	Chicago	3.35	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	2.55	3.85	3.85	3.75@ 4.00
Ind. 4th Vein screenings	Chicago	2.10	2.25	2.35	2.50@ 2.75
Ind. 5th Vein lump	Chicago	2.95	4.75	4.75	4.50@ 5.00
Ind. 5th Vein mine run	Chicago	2.25	3.60	3.60	3.50@ 3.75
Ind. 5th Vein screenings	Chicago	1.80	1.95	2.35	2.25@ 2.50
Standard lump	St. Louis	2.60	4.10	4.25	*3.75@ 4.00*
Standard mine run	St. Louis	1.85	2.10	2.10	2.35@ 2.50
Standard screenings	St. Louis	1.65	1.35	1.50	1.50
West Ky. lump	Louisville	2.85	3.85	4.35	4.25@ 4.50
West Ky. mine run	Louisville	1.90	2.25	3.35	*2.50@ 3.00*
West Ky. screenings	Louisville	1.65	1.80	2.50	*2.00@ 2.25*
West Ky. lump	Chicago	.....	3.85	4.25	4.00@ 4.50
West Ky. mine run	Chicago	.....	2.60	2.75	2.50@ 3.00
South and Southwest					
Big Seam lump	Birmingham	3.35	3.95	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.10	2.35	2.60	2.50@ 2.75
Big Seam (washed)	Birmingham	2.15	2.60	2.60	2.50@ 2.75
S. E. Ky. lump	Chicago	.....	6.25	6.25	6.00@ 6.50
S. E. Ky. mine run	Chicago	.....	3.85	3.85	3.75@ 4.00
S. E. Ky. lump	Louisville	2.85	6.35	6.75	*6.25@ 7.00*
S. E. Ky. mine run	Louisville	1.60	3.35	3.50	3.25@ 3.75
S. E. Ky. screenings	Louisville	1.30	3.25	3.10	3.00@ 3.40
S. E. Ky. lump	Cincinnati	3.00	5.85	6.50	6.00@ 7.00
S. E. Ky. mine run	Cincinnati	1.50	3.15	3.35	3.25@ 3.75
S. E. Ky. screenings	Cincinnati	1.20	2.75	3.25	3.00@ 3.50
Kansas lump	Kansas City	5.00	5.25	5.50	5.50
Kansas mine run	Kansas City	4.10	3.60	3.75	3.75
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

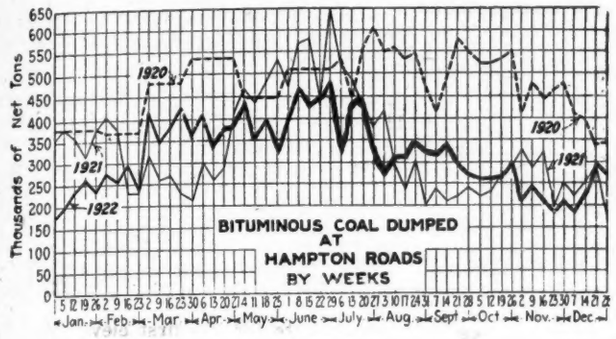
Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Dec. 26, 1922 Independent	Dec. 26, 1922 Company	Jan. 2, 1923† Independent	Jan. 2, 1923† Company
Broken	New York	$2.34	.....	$7.60@$7.75	$9.00	$7.75@$8.25	$9.00	$7.75@$8.25
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	9.25@12.00	8.00@ 8.35	9.25@12.00	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@11.00	8.10@ 8.35	9.25@11.00	8.10@ 8.35
Egg	Chicago*	5.09	7.50	8.25	12.50@13.00	7.20@ 8.25	12.50@13.00	7.20@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@12.00	8.00@ 8.35	9.25@12.00	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@11.00	8.15@ 8.35	9.25@11.00	8.15@ 8.35
Stove	Chicago*	5.09	7.75	8.25	12.50@13.00	7.35@ 8.25	12.50@13.00	7.35@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@12.00	8.00@ 8.35	9.25@12.00	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@11.00	8.15@ 8.35	9.25@11.00	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	8.25	12.50@13.00	7.35@ 8.35	12.50@13.00	7.35@ 8.35
Ranges	New York	2.34	.....	.....	.....	8.25	.....	8.25
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	7.00@11.00	6.15@ 6.30	7.00@11.00	6.15@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 8.00	6.15@ 6.20	7.00@ 9.00	6.15@ 6.20
Pea	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.00	3.50	4.00@ 5.00	4.00@ 4.10	4.00@ 5.50	4.00@ 4.10
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	5.00	4.00	5.00	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	3.00@ 3.25	2.75@ 3.00	3.00@ 3.50	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.50@ 2.75	2.75@ 3.00	2.75@ 3.00	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	1.75@ 2.00	1.50@ 2.00	1.75@ 2.00	1.50@ 2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.00@ 1.75	2.00	1.50@ 2.00	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.10	.....	2.10

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.

and bituminous respectively. Thus it is seen that during the present year to Dec. 1, total receipts of all coal—anthracite and bituminous—was 3,688,000 tons, or 14 per cent less than in 1921."

Hampton Roads dumpings were 277,312 net tons during the week ended Dec. 28, as compared with 300,552 tons dur-


Thousands of Net Tons
1920
1921
1922
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

ing the preceding week. Total dumpings for the year were approximately 14,900,000 tons, as compared with 1921 figure of 17,500,000 tons.

During December 376,050 net tons of soft coal and 97,000 tons of anthracite passed through the "Soo." This brought the season's movement of bituminous coal to 8,790,571 tons and anthracite to 670,447 tons. During 1921 the "Soo" movements totaled 12,507,027 and 2,256,128 tons respectively.

Notwithstanding the coal strike, up to Dec. 16 the railroads reported loadings of 7,093,638 cars of coal during the year, as compared with 7,734,627 cars during the corresponding period of 1921 and 9,731,796 cars in 1920.

ANTHRACITE

Production of anthracite declined to 1,976,000 net tons during the week ended Dec. 23, largely due to ceasing work on Christmas eve and the occurrence of certain church holidays. In comparison with the preceding week's output this was a decrease of 221,000 tons, or 10 per cent. Early returns for last week showed that no coal was loaded on Christmas Day and that even on Tuesday, Dec. 26, loadings were but a fraction of normal. It is not likely that the output for the week will exceed 1,500,000 tons. The cumulative output during 1922 to Dec. 23 is 50,872,000, or 38,934,000 tons less than during the corresponding period of 1921.

Anthracite domestic sizes are being distributed as fast as they are received and dealers are swamped with orders. Substitute domestic fuels are relieving the situation, but these, too, are in short supply.

COKE

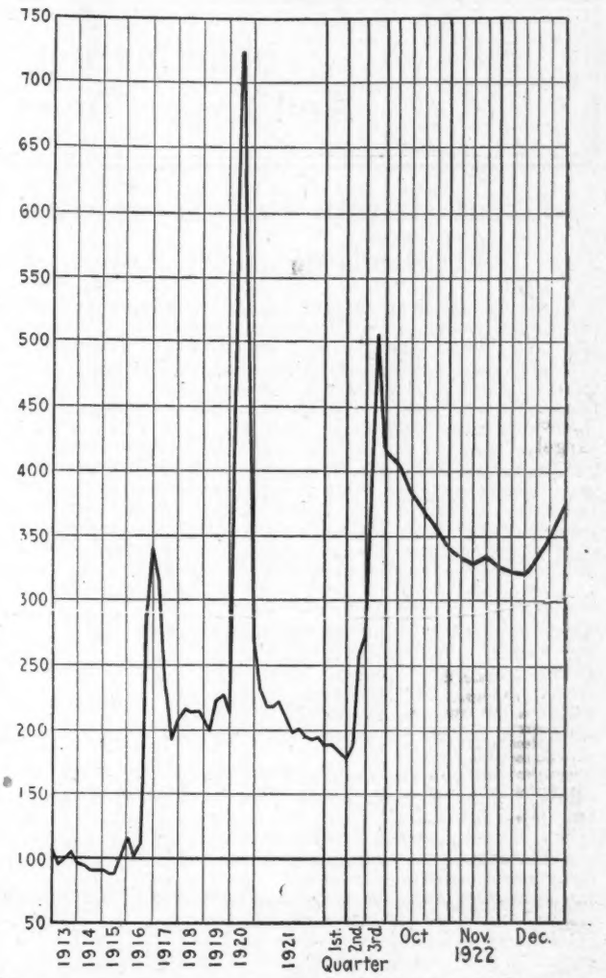
Production of beehive coke declined to 280,000 net tons during the week ended Dec. 23, as compared with 298,000 tons in the previous week. The decline was general in all coke-producing districts except Colorado and New Mexico.

The Christmas celebrations reduced Connellsville production just at a time when the coke market was very active. The emergency domestic demand upset the boat just when blast furnaces were negotiating first-quarter contracts, and prices offered because of the need for coke as a substitute for anthracite places coke out of reach of regular users. Blast furnaces now say they will be forced to bank or blow out unless lower prices are realized soon. Operators, however, are not inclined to put on more ovens to increase the output, as the longer hauls involved would adversely affect the already poor car supply.

Car Loadings, Surplusages and Shortages

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended Dec. 16, 1922	888,082	198,510
Previous week	919,828	200,505
Same week in 1921	726,074	134,789

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortage	
Dec. 15, 1922	7,677	.....	105,018	41,200
Dec. 8, 1922	6,657	.....	111,961	37,613
Same date in 1921	370,000	180,000	.....	.....



Coal Age Index 369, Week of Jan. 2, 1923. Average spot price for same period, $4.47. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 16, 1922 Inclusive	Week Ended Dec. 16, 1922
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	84.4	(a)
Somerset County	55.5	74.9	36.6	42.5
Panhandle, W. Va.	55.3	51.3	57.0	57.8
Westmoreland	54.9	58.8	67.9	56.9
Virginia	54.8	59.9	56.3	49.4
Harlan	53.3	54.8	21.7	24.9
Hazard	51.7	58.4	16.6	15.1
Pocahontas	49.8	60.0	36.5	35.8
Tug River	48.1	63.7	27.5	31.0
Logan	47.6	61.1	25.5	23.5
Cumberland-Piedmont	46.6	50.6	32.3	30.8
Winding Gulf	45.7	64.3	30.5	28.2
Kenova-Thacker	38.2	54.3	42.5	48.2
N. E. Kentucky	32.9	47.7	27.8	27.3
New River	24.3	37.9	31.1	30.1
Oklahoma	63.9	59.6	61.2	38.8
Iowa	57.4	78.4	73.7	77.9
Ohio, Eastern	52.6	46.6	41.5	30.5
Missouri	50.7	66.8	74.4	77.6
Illinois	44.8	54.5	49.9	49.5
Kansas	42.0	54.9	54.1	55.8
Indiana	41.4	53.8	37.7	(a)
Pittsburgh†	41.2	39.8	42.1	(a)
Central Pennsylvania	39.1	50.2	54.4	42.1
Fairmont	35.3	44.0	34.4	38.8
Western Kentucky	32.5	37.7	32.4	27.6
Pittsburgh*	30.4	31.9	56.5	(a)
Kanawha	26.0	13.0	15.3	15.8
Ohio, southern	22.9	24.3	38.1	35.0

* Rail and river mines combined.
† Rail mines.
(a) No report.

Foreign Market And Export News

Great Britain Ends Year with Maximum Production and Growing Demand

Great Britain is ending the year with maximum production. The output during the week ended Dec. 16 was 5,738,000 gross tons, according to a cable to *Coal Age*, exceeding any week since 1913 and compared with 5,592,000 tons during the week ended Dec. 9.

Severe weather during the past week has increased shipping congestion and price concessions are being made to relieve the situation. A South American railway has placed orders for nearly 250,000 tons of second Admiralty at 26s. and for best Monmouthshire at 25s.@25s. 6d.

According to the Board of Trade returns exports of coal during November totaled 6,570,578 tons. In the last eleven months the quantity of coal exported was 58,243,742 tons, compared with 20,351,390 and 22,629,777 tons respectively in the corresponding periods of 1921, and 1920.

Numerous contract inquiries are circulating from France, South America, and other directions over the coming year. The market in Northumberland and Durham is very stable but there is not enough coal to go around. Among the inquiries are the following: The Norwegian State Railways, 35,000 tons of best steam coals for shipment during the next two months; the Frederickshaven Gasworks, 2,000 tons of Durham gas coals; the Aalborg Gasworks, 2,000 tons to be shipped during January; the Soviet Government, 150,000 tons of Northumberland steam coal for deliveries monthly during next season, and the Esthonian State Railways 10,000 tons of steam coals for shipment.

Supplies Gain at Hampton Roads

Little change from the dullness of the past two months was apparent at the end of the year. Total dumpings were approximately 14,900,000 tons, against approximately 17,500,000 tons for the previous year.

Car shortage continued the chief factor in the situation, with stocks somewhat increased after the holiday let-up in output. Demand had fallen off somewhat, with a consequent reduction in prices.

German Production Is Inadequate

The Prussian State has just published its report on coal mining for the first nine months of the current year. As 96 per cent of Germany's production of bituminous coal falls to the share of Prussia, the report permits a comprehensive survey of German coal mining.

GERMAN COAL PRODUCTION

	First Quarter	Second Quarter	Third Quarter
Ruhr	23,958,226	21,899,931	23,594,753
Upper Silesia	2,197,640	2,080,057	2,237,917
Lower Silesia	1,356,251	1,304,753	1,421,158
Bonn	1,568,685	1,407,375	1,491,776
All others	138,188	131,911	145,502
Total	29,218,990	26,824,027	28,891,106

The figures for Upper Silesia do not include the output of the detached part of the province prior to its division, which was 12,577,905 tons. Germany's coal resources are in the main situated near the frontiers. This is of special interest in view of the threatened occupation of the Ruhr district.

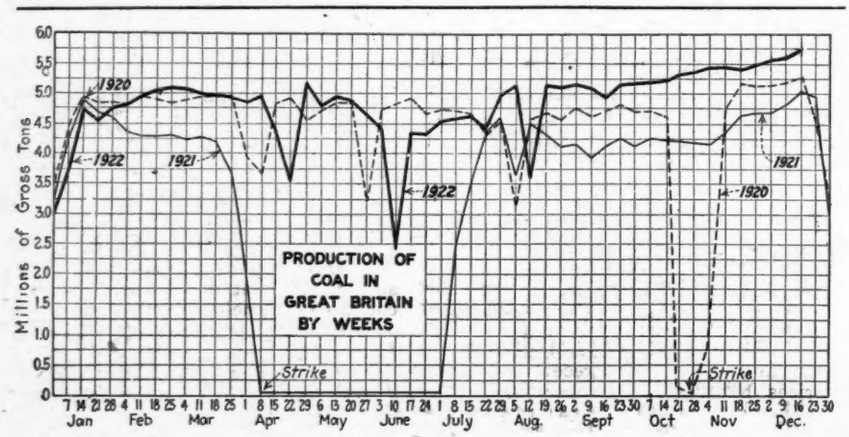
Production in Upper Silesia was 775,371 tons in November as compared with 812,685 tons in October.

English coal shipments to Germany have been falling off during the last 60 days, although up to the autumn months the total imports had grown by leaps and bounds.

BRITISH COAL IMPORTS IN GERMANY

	Tons
January	247,300
February	359,900
March	467,700
April	256,600
May	601,500
June	889,600
July	1,133,400
August	1,165,200
September	1,060,800
October	918,600

At the allied conference the French have asked that an allied or French commission be set up at certain points in the Ruhr to control delivery of the amount of coal ordered by the Reparation Commission. Also that a tax be established on coal in the Ruhr district, under an allied or French commission. One-quarter of this tax to be payable in foreign currency, and it is estimated that 400,000,000 gold marks a year can be collected.



Hampton Roads Pier Situation

	Week Ended Dec. 21	Week Ended Dec. 28
N. & W. Piers, Lamberts Pt.:		
Cars on hand	638	958
Tons on hand	40,185	65,709
Tons dumped	112,801	110,420
Tonnage waiting	17,350	8,850
Virginian Ry. Piers—Sewalls Pt.:		
Cars on hand	814	921
Tons on hand	46,600	51,050
Tons dumped	96,078	74,072
Tonnage waiting	23,301	15,000
C. & O. Piers, Newport News:		
Cars on hand	619	1,144
Tons on hand	35,000	67,750
Tons dumped	59,471	63,108
Tonnage waiting	3,320	2,718

U. S. Exports During November

November exports were 440,208 tons of anthracite and 1,618,037 tons of soft coal as compared with 329,380 and 1,078,806 tons respectively in November, 1921. For the eleven months this year there were 1,983,429 tons of anthracite and 9,614,195 tons of bituminous coal exported as compared with 1921 figures of 3,869,944 and 19,822,735 tons respectively.

Pier and Bunker Prices, Gross Tons

	Dec. 23	Dec. 30†
PIERS		
Pool 9, New York	$8.50@$8.75	
Pool 10, New York	7.50@ 8.00	**$8.75@$9.25**
Pool 11, New York	7.00@ 7.50	**8.15@ 8.50**
Pool, 9, Philadelphia	8.10@ 8.30	**8.35@ 8.50**
Pool 10, Philadelphia	7.60@ 7.80	**7.90@ 8.00**
Pool 11, Philadelphia	7.00@ 7.25	**7.25@ 8.50**
Pool 1, Hamp. Roads	8.25@ 8.50	*7.50@ 8.80*
Pools 5-6-7 Hamp. Rds.	8.25	*7.25@ 8.00*
Pool 2, Hamp. Rds.	8.25@ 8.50	*7.50@ 8.00*
BUNKERS		
Pool 9, New York	$8.90@$9.15	
Pool 10, New York	7.90@ 8.40	**$9.00@$9.50**
Pool 11, New York	7.40@ 7.90	**8.40@ 8.75**
Pool 9, Philadelphia	8.35@ 8.65	**8.60@ 8.90**
Pool 10, Philadelphia	8.00@ 8.25	**8.30@ 8.50**
Pool 11, Philadelphia	7.15@ 7.50	**7.50@ 7.75**
Pool 1, Hamp. Rds.	8.25@ 8.50	*7.50@ 8.00*
Pool 2, Hamp. Rds.	8.25@ 8.50	*7.50@ 8.00*
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	42s. f.o.b.	42s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to *Coal Age*

Cardiff:	Dec. 23	Dec. 30†
Admiralty, large	28s.@29s.	*28s.@28s.6d.*
Steam, smalls	17s.6d.@18s.	**18s.@19s.**
Newcastle:		
Best steams	25s.	25s.
Best gas	24s.@24s.6d.	**25s.**
Best bunkers	22s.@23s.	22s.@23s.

† Advances over previous week shown in heavy type; declines in *italics*.

North Atlantic

Events Combine to Boost Market on All Coals

Though Prices Rise Rapidly, Little Free Tonnage Is in Sight—Bidding Now Common—Best Grades Disappear—Domestic Demand Out of Bounds.

Curtailed holiday production, insufficient car supply and inclement weather have boosted the market on all coals. Although prices have increased rapidly in the last two weeks there is very little free tonnage to be had and those who must have an immediate supply are bidding for the coal that is rolling.

Mediocre coals are now eagerly sought, as the best grades are practically unobtainable and reserves at the smaller industries are evidently approaching the danger line. The domestic demand has grown out of bounds and has further cut into the available spot supply. Shippers are securing fancy prices for screened coal that is on wheels.

BALTIMORE

Industrial demand has increased to such an extent that the meager supply is very inadequate. The car supply is wretched, and even the lightened production due to Christmas and New Year holidays could not be taken care of by the number of empties received.

Prices kept mounting and even mediocre coals were quickly absorbed around $4 and better. The greatest trouble with traffic at present seems to be the widely scattered distribution of coal cars and the inability of the railroads to get quick unloading and dispatch.

The export situation continues a closed book. A review of the industrial situation in Maryland shows that while a few of the larger industries have fair supplies ahead that others of important nature are now at the danger line. In an effort to prevent any industrial stagnation, some of the coal men are using their discretion about handling in full some of their contract calls and giving a little of the coal to emergency cases.

NEW YORK

Very little spot coal is being offered. While reports show the cars at the local terminals to be steadily increasing it is known that most of the coal is on order and that the free coals consist mostly of Pool 11. Quotations are increasing rapidly, most grades showing advances of $1.50@$2 from those of about two weeks back.

Demand is stronger but there is no flood of orders. Inquiries have increased probably because of the continued car shortage which is as bad as it was before the Christmas holiday. Public utility corporations are now in the market and several railroads are buying high-volatiles around $3.50.

The use of bituminous coal as a substitute for anthracite has aided in keeping down the supply at the local terminals. Screened bituminous has grown into such favor that the supply cannot meet the demand. Some operators are refusing orders until they get caught up.

Coke is in good demand. Some houses are booked so far ahead that new orders are being refused for the present. Quotations for 48-hr. run of oven, low-sulphur, range from $8.50 without car numbers to $9.50 with car numbers supplied; prepared coke is being quoted around $12.50 at ovens.

There were about 2,679 cars at the local piers on Dec. 29, as against 2,465 cars the previous day.

High-volatile coals, including Pool 4, were quoted around $4.85 f.o.b. mine; slack, $3.75@$4; 3-in. lump, $5@$5.50. Other quotations heard late in the week included Pool 14 at $8.25@$8.50, f.o.b. local piers.

CENTRAL PENNSYLVANIA

Slight improvement is noted in the car supply. On the Cresson division of the Pennsylvania there was a 30 per cent distribution on several days last week, due, it is said, to the fact that the railroads are pretty well stocked, thus releasing cars for commercial purposes. Conditions are reported worse along the New York Central lines. On the Pittsburgh, Rochester & Buffalo road there is still a 100-per cent distribution. However, this line does not reach much of this field.

Production shows but little variance from November. Up to and including Dec. 21, the production was 54,910 carloads as compared with 55,303 cars for the corresponding period of November. Prices are advancing and are higher now than at any time during the fall and winter.

PHILADELPHIA

The holiday season has had the effect, as usual, of curtailing production, and this combined with the indifferent car supply, has made it a difficult matter to anywhere near meet the demands of the consumer. With winter just beginning it looks as though the consumer without heavy reserve stocks is going to find it difficult to have his needs cared for. The promise of betterment in the immediate future is not encouraging, as no sooner are the regular holidays over, when the celebration begins all over again on Jan. 8 with the Greek Christmas.

Prices have again gone upward, but as there is so very little tonnage to be had it really doesn't mean a great deal, as most consumers are being supplied by their shippers on contracts or on block orders placed a long while ago. In many instances the consumer who is seriously short simply makes new offers in his desperation for fuel, and most spot sales recently at high prices have been for coal which was rolling.

Those concerns with good grades of coal who have been making a bid for a domestic market for their fuel are receiving added encouragement from their customers, who state they have developed many users who expect to continue the use of soft coal. The only drawback at present is the slow movement of coal on order.

FAIRMONT

Cars are more plentiful than in the high-volatile fields. Many of the mines, however, especially those loading commercial fuel are not getting as much as a 30-per cent supply of empties. The Western Maryland is furnishing more cars proportionately than is the B. & O. The Christmas holiday intervened to curtail production somewhat. Prices are advancing in response to a heavier demand.

UPPER POTOMAC

The advent of the holiday period found mines in the Upper Potomac and Georges Creek regions producing coal on a somewhat larger scale than had been possible earlier in December. The improvement was especially marked in the Upper Potomac region. With the demand in the East attaining larger proportions, prices are on a somewhat higher level.

West

SALT LAKE CITY

Retailers are doing a good business, but operators report things as quiet. Prices remain firm, except for nut coal. More "charity" coal was sold during the holiday season, according to one prominent dealer. On the other hand another leading firm said fewer persons had bought coal for presents this year than for a long time. The labor and car situations continue satisfactory.

DENVER

Transportation has grown a little easier in Colorado and the softness of the weather has slowed down the market so that plenty of coal is reaching everybody who wants it, with prices steady as follows: Walsenburg lump, $6; nut, $5.50; Trinidad lump, $5.50; nut, $5.25; Canon City lump, $6.50; nut, $6. Production is a little better but the state's total for the week was only about 56 per cent, which is from 10 to 15 per cent less than the running time of all the surrounding coal states.

KANSAS CITY

With a slightly strengthened market as a result of the recent clearing of mine tracks of no-bills and a consequent diminution of supply, coal men of this district are feeling the pinch of weakened transportation. Kansas mines are operating from 40 to 45 per cent of normal time, and Arkansas mines, the products of which must be moved a greater distance, only 25 per cent of normal. Unseasonably, warm weather so far has kept the situation from becoming extremely serious.

Quotations on Kansas coal are: Lump, $5.50; nut, $5; mine run, $3.75; screenings, $2.50. Arkansas coal is quoted at $6 for lump; $4 for mine run, and $2 for slack.

Anthracite

Retailer Heavily Burdened As Icy Temperature Appears

Distribution of Small Lots Covers Wide Area — Substitute Supply Low — Storms and Poor Car Supply and Motive Power Hamper Delivery.

The advent of severe weather has placed a heavy burden on the retailer. Receipts of anthracite have been sufficient to keep the yards working at top speed mainly because the small-lot distribution has been spread over an unusually wide area. The supply of substitute fuel is running down, as cars are scarce in the soft-coal fields and deliveries are hampered by storms and poor motive power.

Independent producers are securing their own figures for prompt business, although the East is taking but little of the higher-priced coal. All steam sizes move easily and buckwheat commands a premium. Washery product sells at very little price concession.

BALTIMORE

The last days of the old year brought a better run of anthracite to Baltimore, just when the majority of yards were completely out of coal and hundreds of householders were clamoring for new supplies. Some relief also came through the arrival of coke.

In order to speed the deliveries, the Police Department lifted the ban against deliveries on Sunday. The better arrivals of anthracite in the past few days will probably give the "coal politicians" another chance to give out a story to the daily press of Baltimore telling "what we did." This entire situation is one of the few points of comedy in the fuel supply situation in the minds of people who really understand the coal trade. Because of light call at city stations established to sell fuel to the poor it has been practically decided to abandon this means of relief.

NEW YORK

The local situation is serious. There is little domestic coal to be had and the supply of substitutes is growing less. Cold weather has resulted in a greater demand which the dealers are not able to meet. Domestic coals, including pea size, arriving here disappear almost as rapidly as they are received.

The peddler pool coal stations provided by the State Fuel Administration are doing a better business than when first established. A couple of thousand consumers living in the lower section of Manhattan who had bins large enough to hold a half-ton were enabled to secure that quantity early last week through the co-operation of the Fuel Administration and one of the large retail dealers.

Cashiers' checks are being offered by buyers in the mining fields for quick shipments, according to information received here. Not much of the high-priced domestic coals of the smaller independent operators are being brought here.

Pea is as short as the larger sizes. Offers of washery pea coal at around $13.50, alongside this harbor, were reported late in the week, while fresh-mined pea was quoted at $14.75, alongside.

Buckwheat has gained much strength. The surplus has been cleaned up and is growing scarcer. The better grades of independent product are going at a premium over company schedules. Rice and barley are holding firm. Current prices are quoted in the Weekly Review.

BUFFALO

The hard-coal trade is just now facing a big snow storm and it sets people to teasing for coal as they have not done in the time just passed when there was not much snow and only cool weather. Dealers do not really believe anyone is suffering for want of fuel, but there is at least much inconvenience and it is going to last till the worst of the winter is over. It is useless to expect more than that. The consumption equals the mining.

The independent shipper rubs his hands over the advance from $9.50 to $14.50 and is pleased to know that the consumer who would not pay the smaller price is eager to pay the larger one now.

The Mayor of Buffalo has set a policeman to counting the cars of coal that go across to Canada, though nobody believes that he knows hard coal from soft and there is enough soft coal for all. And if it was all anthracite the Mayor has no authority to act in the matter.

After the Lake trade closed some of the shippers diverted some cargoes that did not get off, into the local trade, and the increase has made a big difference in the situation. But the one-ton delivery is likely to last just the same.

PHILADELPHIA

The advent of wintry weather has put a heavy burden on the retail trade. Buyers in their eagerness for coal are going from yard to yard in the hope that they can find some dealer willing and able to care for their needs.

Dealers generally admit that there have been good shipments of coal made to them during the past ten days, and with some of them the cars accumulated just a trifle faster than they could unload. These latter cases were, of course, exceptional.

Practically every dealer has received enough coal to keep him busy. Unfortunately, they are all so far back on their orders that they hardly know where to send the coal. The time has come when those people who, earlier in the fall were served with one or two tons, are now coming back for replenishment.

The larger companies say that they are fully up to their allotments of 60 per cent of last year's supply. Prices, both wholesale and retail, remain quite stable, and it is really exceptional to hear of offerings of coal at any price. Occasionally a dealer has been known to seek a car or two of family coal at prices up to $13, but unable to place the business. However, in another instance a dealer was able to place an order for two cars each of egg, stove, nut and pea at a flat price of $12.

The steam trade is strong and there is no surplus buckwheat, as the companies who were storing this size are now picking it up. Independents are getting up to $5 a ton for such buckwheat as they sell on the market. The companies still have sufficient rice, but barley is being more closely taken. Most individual shippers are moving all steam sizes without difficulty.

BOSTON

Protracted gales and thick weather along the coast have interfered with arrivals, and all-rail on accentuated car shortage together with light production have meant very meagre receipts recently. There is a feeling that with full output in January the hard-coal situation will gradually correct itself, but of course a further season of storm and cold will upset such calculations.

At retail the dealers are managing somehow to keep things going. A reasonably heavy tonnage of bituminous is being used in place of anthracite especially in apartment houses, and this is bound to be felt later on.

South

BIRMINGHAM

The accumulation of empty coal cars during the holidays has served to afford a fairly good quota at all mines and is expected to give temporary relief to the car shortage for the remainder of the week. Mine labor is somewhat slow in returning to work and normal forces will probably not be available until after New Year's. Output for the week of Dec. 23 and also for the week of Dec. 30 will be considerably below the weekly average, due to the mines being idle on account of Christmas.

The market for both commercial and domestic coal has been very quiet during the past week. Continued warm weather has slackened interest in domestic trade and there is no insistent demand for such fuel except as occasioned by the recurring periods of cool weather. There will probably be more favorable market conditions and a better demand for commercial coal after the turn of the year.

Prices remain stable, no changes being noted over the quotations given a week ago.

VIRGINIA

Production is much below market requirements, owing to further losses sustained as a result of an even more limited supply of empties. About 22,000 tons of coal per week are being used for the production of coke, there being a ready demand for it in the district. More coal is being produced on the line of the C. C. & O. than on any other line in the district.

Chicago and Midwest

Markets Hold Strong on Everything They Can Get

Demand Is Fairly Stiff for Both Steam And Domestic Though No Heavy Stock Call Is Heard—Railroads Hold Down Production under 50 Per Cent.

Nothing seriously worries the coal markets of the Midwest region nowadays. All available coals are in fair demand at firm prices high enough to make it worth anybody's while to handle coal. Illinois and Indiana domestic sizes bring $4@$5.50 and there is a place for all that can be shipped. Steam buyers take enough of the smaller sizes to keep distress coal practically off the market even though few of them are buying heavily for stock, apparently figuring there is real doubt of a spring strike. Steam prices are steady and have advanced a little in Indiana.

Transportation, which was extremely bad a week ago during the pre-Christmas zero weather, has slowly improved during the recent comparatively warm spell but production in this territory is still below 50 per cent. This is enough to just about take care of the demand on Western coals. Traffic congestion is keeping most shipments from the East down low.

CHICAGO

After weathering a period of painful transportation trouble and a coal spell which snapped up demand for all sorts of coal to the rush point, concerns here are still busy meeting a fairly strong call for most coals. Domestic sizes are maintaining last week's prices evenly. Steam demand has pushed screenings in Indiana up about 25c. and the trade is buzzing along at a good clip in spite of a week of weather that was decidedly warm for late December. Car supply has been improving a little throughout Indiana and Illinois, but it still is an exceptional mine that works more than half time.

There is no sign of immediate heavy stocking by big consumers here. The slow process of rolling in small reserves continues, but the general opinion of Western operators that a strike is going to be avoided has already taken off what little edge there was to storage demand. Buyers here give evidence of planning to wait at least until after wage conferences start before they decide what to do about preparing for a spring shut-down of mines.

Very little coal other than that from Indiana and Illinois is trading here now. A Cincinnati transportation jam has shortened down shipments from the East materially and Kentucky coal is now going principally to other markets, though it requires very little encouragement to start a flood of western Kentucky fuel in this direction. Anthracite at mine prices ranging $6.25@$8.25 continues to come in a small but steady flow through one big Erie shipper retailing here at $14@$17. Pocahontas shipments here are slight indeed. Current prices are quoted in the Weekly Review.

ST. LOUIS

A little cold weather has caused a picking up in the domestic market in St. Louis proper. This is chiefly for small loads and the cheaper grades. Country domestic has also shown up a little better the past week. Steam is slow locally and in the country but a good tonnage is moving to the Chicago market. There has been no change in retail prices.

A little storage coal is being put in by big manufacturing plants. One plant reports 50,000 tons on hand Jan. 1 and another, 15,000 tons. These are fully supplied and are about the only two plants that have their storage up to the maximum.

SOUTHERN ILLINOIS

While the weather is not exactly seasonable, yet the demand for the better grades of Carterville and Duquoin coal has been good and most mines are sold up on all sizes. This is principally caused by the car shortage which has given the mines about two days working time the past week. Mines producing an inferior coal, however, have no bills on hand. The association mines are maintaining a price of $5.50 on the domestic sizes and $3 on screenings. The independent mines are as low as $4.50 on domestic sizes and $2.75 on screenings. Railroad tonnage is fair.

Mt. Olive movement is slow on everything excepting railroad tonnage, which is fairly good to the Northwest. Car supply is sufficient to cover the demand. Domestic sizes in the St. Louis market sell for $4 and outside for $4.50. Steam sizes, egg and nut, are a little heavy selling down to $2.50.

In the Standard district conditions are unusually bad on account of no cars. Pennsylvania lines have been jammed up in the last two weeks, perhaps the worst in several years. The B. & O. have a record at one mine of giving it cars for fourteen hours' work between the 18th and 30th of the month.

Prices on Standard 2-in. lump are $3 @$3.25; 6-in., $3.75@$4; steam nut and egg, $2.50@$2.75; mine run, $2.35@$2.50. Car supply in this field varies from one day a week to three days on different roads. Steam is moving about equal to domestic sizes.

INDIANAPOLIS

After nearly a week of zero weather, moderating temperatures have softened the coal business, especially the retail end. The holiday season hurt the industrial demand, as many of the plants in the state closed during the week for inventory.

In those instances where prepared grades had been increased 25c. a ton and sometimes slightly more because of the sudden rush with the advent of zero weather, a relapse has been noticed in the prices. Prices of West Virginia and Kentucky coals continue weakening slightly. The transportation situation has been such in the past two weeks that the normal flow of these coals into Indiana has been hampered, but even with slightly less tonnage delivered there is no price strength.

LOUISVILLE

Jobbers and producers report a dull market this week, and except for the very light loadings, due to car supply and the fact that miners are loafing, prices would probably be lower than last week. With the mildest sort of weather general consumption is light, and industries are refusing to place much tonnage until after the inventory period. Jobbers report that there is no general inquiry from any line of industry. Retailers are buying in very small quantities.

Calling off of some railroad embargoes on movement of freights other than coal, food and livestock, show that terminal congestion is being relieved, and the transportation situation looks much better, provided there is no heavy snow or severe weather. Present indications are for better return of empties to the mines, and a softening rather than a strengthening of the market.

Quotations show eastern Kentucky lump, $6.25@$7; mine run, $3.25@$3.85; screenings, $3@$3.50; western Kentucky lump, $4.25@$4.50; mine run, $2.50@$3; screenings, $2@$2.25.

WESTERN KENTUCKY

Miners have done little work since Christmas, and many mines have been down, or limping along on short forces. Poor car supply has not been felt so much the past few days, due to the poor loading capacity. However, transportation is light, and with good weather indications are that railroads are cleaning up congestion, and that there will be a much better car supply available before long. In fact it is now showing some improvement. Transportation conditions are better generally, it is said.

Prices are firm but not advancing as had been anticipated when a few days of cold weather broke in shortly before the holidays. Some operators report that they are just about supplying contracts, booked business, etc., and are not soliciting orders until the holidays are over, being unable to figure a good production. Industrial demand is slower over the inventory period and with mild weather price advance looks to be checked for the time being, especially if car supply improves.

Christmas was the warmest December 25, since 1893, and as a result of the very mild weather retailers are buying in small lots, as domestic demand has been quiet generally since just before Christmas. Even charity orders on retailers for half to ton lots, have been scarce this year.

Quotations at which coal appears to be moving show lump at $4.25@$4.50; mine run, $2.50@$3 and screenings, $2 @$2.25. However, some lump is quoted as high as $5, and some low grade at $4, while some mine run quotations are reported as high as $4 and screenings as high as $3.

Eastern Inland

Wintry Blasts Hit Car Supply; Market Stiffer

Domestic Is Strongest Feature—Smokeless Practically Unobtainable—Offerings of Industrial Fuel Curtailed by Holiday Idleness—Volume of Demand Unchanged—Quotations Advance.

Severe weather has made the car supply more irregular and the market has stiffened further in the past week. Domestic coal is, of course, the strongest feature, as retailers are hard put to replenish their stocks, which are rapidly being distributed to householders in response to an active demand. Smokeless sizes are practically unobtainable.

Holiday idleness reduced the offerings of industrial coal and while the volume of demand remains unchanged the advancing quotations show the urgency of consumers' hand-to-mouth needs, as the spot tonnage is being accepted without any price bickering.

CLEVELAND

Domestic consumers have small amounts on hand and dealers have not been sufficiently well stocked to supply the demand without replenishing their supplies, with the result that coal buying on the part of dealers has been more firm. Gradually consumers are learning to substitute soft coal for anthracite and West Virginia coal, which is difficult to obtain. Railroads are buying a larger tonnage than any other consumers.

Southern coal is coming into this district more easily over the Wheeling & Lake Erie, but shipments that are routed by way of the C. & O. have been delayed the last few days in contrast to a recent increased movement by this route.

Pocahontas shoveled lump is sold at around $13, delivered. Prices on Ohio coal shipped here are remaining firm. Good buying is expected on the part of steel plants in this district after the turn of the year. Mills are booked with orders for some months to come, demand is strong and prices are stiffening. The backbone of steel demand is the large purchasing by the railroads.

EASTERN OHIO

Operations were at a minimum during the pre-holiday week. On Dec. 18, about 1.140 cars were loaded, and each succeeding day registered a lower output, on Saturday, only 721 cars being loaded. Aggregate production amounted to 266,000 tons, the lowest figure for any six-day week of the year.

Severe weather has slowed up railroad movement to a considerable degree. At the present rate of production, over half of eastern Ohio's output is going to the railroads for fuel, both for current needs and necessary reserve stocks at this time of the year. Consequently the supply of fuel available for other steam users has become more restricted and keen demand from that quarter has stiffened up prices from 25c.@50c. per ton on most all grades.

With the present status of the coal trade, due principally to transportation conditions which are not expected to improve much before spring, and the possibilities of another coal strike at the end of the coal year, many operators are advising their customers to not only buy now for current needs, but to begin building up their reserve fuel so as to be on the safe side.

Retail demand is unusually active and current supply is inadequate.

Cumulative figures covering the output for the calendar year to Dec. 23 indicate an aggregate production of 10,902,500 tons, as against a potential capacity of 30,834,000 tons, or only 35 per cent operations.

Receipts of bituminous coal at Cleveland during the week ended Dec. 23 fell off 500 cars from the volume received during the preceding week. Total arrivals were 2,552 cars, of which 1,988 cars were for industries and 664 cars for retail yards.

PITTSBURGH

While the general average of car supplies may not be different from that of a month ago, there seems to be much more irregularity from day to day, and between divisions. The uncertainty seems to have an influence on market prices, which are stiffer, although the total demand is not materially altered. No definite information is available as to stocking of coal by consumers but there is reason to assume that there is a very fair volume of stocking, possibly more than there was a year ago.

Pittsburgh steam coal has sold both at $3 and $3.50 in the past few days, although there are no differences in tonnages or grade sufficient to account for so wide a spread. Youghiogheny gas is decidely higher, having brought as high as $4 for mine run. Gas slack is irregular, and generally quotable at $3@3.50.

Industrial consumption appears to be improving a trifle. The steel mills have run through December at their former gait, instead of curtailing as they usually do at the year-end. Prospects are for heavy operation through the first quarter.

DETROIT

With the holiday season at hand, other interests apparently are taking precedence over the business of buying bituminous coal. Sales are coming at irregular intervals. The buyers generally seem to be limiting their purchases to the smallest quantity that will provide for current requirements.

Receipts are not large. Jobbers say the shipments at present are scarcely equal to the quantity of coal moving into the city before the closing of navigation on the Lakes. The decrease is attributed to the effect of railroad embargoes, as well as to the transportation obstacles created by winter weather.

West Virginia or Kentucky lump and egg is quoted at $5.50, with mine run, $3.25 and slack, $3. Pittsburgh No. 8 lump is $4.25; mine run, $3.25; slack, $3; Hocking lump is $5.50; egg, $5; mine run, $3; nut, pea and slack, $2.90. Smokeless lump and egg is around $8, with mine run and slack, $5.75@$6. The supply of smokeless continues light.

Anthracite receipts are not increasing and little encouragement is given to hope for a more adequate supply.

COLUMBUS

The coal trade is showing considerable strength, even during the holiday period when the market is usually unstable. Prices are on the upgrade although advances have not been heavy.

Domestic trade is still the big feature, with retailers buying actively to rep'enish stocks. Householders are placing larger orders as the cold weather has apparently come to stay. Retail prices in Columbus are steady and the cutting of several weeks ago has disappeared. Only a small tonnage of smokeless is finding its way into the market.

Steam business is showing more activity in all localities. This has caused an advance of 15c.@25c. Assigned cars for railroad fuel comprise a good percentage of the output.

The car supply is not increasing and is estimated at from 35 to 40 per cent in the Hocking Valley, Crooksville and Pomeroy fields. Following Christmas there was a pretty fair run but some mines have not produced, owing to the disposition of miners to stay away from work.

BUFFALO

The market is decidely quiet, but the scarcity of cars has stiffened the prices some. A very heavy passenger business during the Christmas holiday seems to have taken up the motive power and when that drops off, as it will soon, the light demand is expected to restore prices to the old rather low level.

The labor situation comes in for a large amount of discussion now. There had been a general prediction of an April strike, but recent declarations from the union head that there will be no strike has set the speculation in a somewhat different direction. It is pretty plain that the meaning of the speech is that control of the situation can be held without a strike.

Consumers are not inclined to buy much coal against strike possibilities. The entire trade is becoming used to some sort of a struggle and is prepared, though not welcoming it.

Quotations are: $4.75@$5 for Youghiogheny gas lump; $4.25@$4.50 for Pittsburgh and No. 8 steam lump; $3.50@$3.75 for all mine run, and $3@$3.25 for slack, adding $2.09 to Allegheny Valley and $2.24 to other coals, to cover freight.

NORTHERN PANHANDLE

Owing to transportation conditions railroad fuel loading is larger than any other class of business. River shipments and local deliveries are helping to swell the sum total of production. More coal is being used in the iron and steel mills in the Wheeling district. Embargoes are interfering to some extent, however, with Western shipments. There is a steady demand in Northern markets.

Northwest

Free Dock Coal Scarce: Region Relies on Rails

Lake Shipping Brought Less Than Half Normal Supply—Extra Effort May Get Overland Anthracite—Demand for Coal Softens with Weather.

Now that Lake shipping is ended for the season there are many eyes on the dock coal stocks. A good deal of bituminous is on hand but most of it is railroad or contract fuel so that free coal is scarce indeed. Soft coal by rail is so easily available, however, that there is no worry about that. Anthracite is a different story. Extra and official effort is being made to get considerable hard coal by rail all winter.

The comparatively warm weather of the past week was been enough to return the market almost to its pre-cold snap lethargy so far as bituminous is concerned. Price concessions were resorted to again before the end of the week and surplus coal is on the market throughout the southern Lake country.

MINNEAPOLIS

With the close of the old year, the federal fuel distributor for the Northwest ceased his labors. At about the same time, the available stores of anthracite were exhausted in the hands of wholesalers. For the remainder of the winter, the Northwest must depend upon all-rail receipts. The season has seen between 40 and 50 per cent of a normal season's stock received and the carry-over would run the entire total up to perhaps 60 or 70 per cent.

The coal selling season is at its height and it will be up to the trade to worry along as best it may, until spring. There is a pronounced shortage of hard coal. How much cannot be determined, since it is so entirely a weather proposition. Undoubtedly the normal consumption has been reduced by mild weather and by the use of other grades.

The soft coal market is easier again. The weather moderated sharply after a few days of real cold. Consumption and buying took a sharp slump. During the severe weather, there was no surplus coal in the market, but it reappeared soon. It has not demoralized the market but price concessions have been forced. The dock trade found the severe weather a big help toward stabilizing its market, and has been able to present a fairly consistent market position for some days. But the market basically is weak.

MILWAUKEE

The market is quite active, as an aftermath of the recent zero weather. Local consumers of anthracite are forced to buy sparingly, as the dock companies are conserving stocks in order that they may be able to deal equitably with both the city and country trade. Soft coal and coke are in good demand. Western screenings are fairly plentiful, but the popular sizes of coke keep well sold out. There is a scarcity of screened Pocahontas but an abundance of mine run.

A real hard cold snap is bound to make business lively for everything burnable, as coal dealers have only been buying to meet immediate needs, notwithstanding the uncertainty of rail transportation in winter. The rail situation at present is about 50 per cent of normal. There have been no changes in prices.

The hard coal shortage is so acute that the state fuel authorities contemplate, in the event of prolonged cold weather, seizing of anthracite for adequate distribution. The State Legislature will be asked to give the coal authorities more power to dictate to coal distributors. With distribution centralized, it is believed every community will get its just share of hard coal.

Wisconsin has received only 29 per cent of a normal anthracite supply. Ample stocks of soft coal will tend to relieve the hard coal shortage. Gov. Blaine is using every effort to secure at least 250 carloads of anthracite daily during the winter.

Many complaints have been received by coal dealers of the poor quality of coal that is being marketed.

DULUTH

Estimated stocks on the docks here now come to 2,700,000 tons of bituminous coal. Of this, 1,000,000 tons is owned by the railroads and 1,000,000 tons is under contract. This leaves 700,000 tons free. The demand for both anthracite and bituminous has dropped off appreciably in the last week. Mild weather causes the anthracite slump. There are some hard-coal stocks still left on the docks but these are being apportioned out to satisfy the need, so there is really no free anthracite. Householders are using a good deal of buckwheat mixed with egg.

A notice of real suffering from lack of anthracite at Streeter, N. D., and Marble, Minn., has been received here from C. P. White, retiring fuel administrator at St. Paul. Mr. White asked that anthracite be shipped immediately and the order was complied with.

The slackness in bituminous coal comes from the fact that consumers have purchased well already, and are in the main overstocked for present needs. There seems to be no doubt that the Northwest will come through the winter on the stocks on hand and what will be shipped by all-rail.

A comparison of prices with last year in the bituminous market is interesting. Now soft coal is selling at $9.50 for lump, $8.50@$8.75 for run of pile and $6.25@$6.50 for screenings. Last year at this time bituminous coal was selling for $6 for lump, with a 50c. differential for run of pile and screenings. Pocahontas is in strong demand.

New England

No Let-up in Inquiry for Good Low-Volatile Coals

Prices Climb Steadily—Slow Delivery All-Rail from Central Pennsylvania Causes Some Declination of Commitments — Reaction in High-Volatile Sets In.

Due to heavy demand from householders, inquiry for all the favorably known low-volatile coals has by no means relaxed. Quotations advance every few days. Deliveries all-rail from Central Pennsylvania are very slow and in many cases operators have been obliged to decline making further commitments.

For a considerable period there was no appreciable increase in demand for coals in excess of 30 per cent volatile, but now there has set in a reaction in that direction as well. Grades that were selling at $2.75 per net ton at the mines a fortnight or so ago have sold recently as high as $4.50, and so long as the anthracite situation remains uncorrected there is every prospect that prices will continue to advance. It is notable that coals originating as far west as Pittsburgh and taking a relatively high tariff to this territory have been in demand, especially for screened sizes, and this is likely to continue well into January.

Pocahontas and New River remains in short supply at Hampton Roads. Car supply is erratic, but with most of the agencies prepared sizes are moving west rather more heavily than run of mine is reaching Tidewater. Shipments on contract are being made with fair regularity, but for spot shipment there is surprisingly little tonnage available, and correspondingly there seems no strong inquiry for the smokeless coals here in cargo lots. For Inland delivery, in restricted tonnages, there is an improving demand which is reflected in higher prices from week to week.

While the shortage of anthracite is almost a determining factor in the present bituminous market, yet the shortage of cars on the originating roads continues to be a serious consideration. Much more steam coal is being produced than would be necessary for the industries on their present basis and as soon as anthracite begins to flow in better volume it is probable that the change will be promptly reflected in spot quotations for all the coals that reach this territory via the all-rail route.

Cincinnati Gateway

Holidays Add Their Impetus to Upturn Of the Market

Railways Have Been Able to Clear Congestion Points of Most of Their Clutter of Cars but Empties Are Slow in Returning.

With production held at a low ebb because of the usual holiday lay-offs and with a small amount of free coal moving there has been quite a scramble for that which could be picked up as it passes through "the neck of the bottle" and another upturn of 25c.@ 50c. a ton has been the net result. So far as actual sales are concerned the steam grades are now practically on the same basis as gas and by-product coals.

The L. & N. is again allowing free movement through this gateway and claims to have its car accumulations pretty well cleared away. The N. & W. is said to be in better shape than for months, while the C. & O. seems to be neither better nor worse. The clearing of the congestion at Toledo is always a big help to this market, and, right now the Pere Marquette is said to be the only line that is clogged.

CINCINNATI

The volume of business for the holiday season has been rather surprising and would indicate that the hand-to-mouth process of supply this year will permit of no slowing up. Domestic coals have been in excellent demand and even with a large number of mines turning to this make it does not seem possible to keep pace with the demand. Good Kentucky block had no difficulty in bringing $7 while better grades of West Virginia were being quoted at $6.50@$7.

The smokeless situation has developed into an acute shortage. Chicago buyers and those of the Inland territory have been offering local jobbers a price that permits of an $8 bid for lump and egg, but little or no tonnage to be had at those fancy figures. Sales agents have not deviated from the $6-price, top and bottom, for everything from screening to lump, but with the narrowing of the shipments west their proratings have been smaller than for months. Little or no Dry Fork or New River is coming on the market now.

HIGH-VOLATILE FIELDS

KANAWHA

On the eve of the Christas holidays the transportation situation was worse than it had ever been. The district is getting cars about every tenth day, so that the order directing that an excess of cars be turned over to the C. & O. by Western roads is not helping matters any after all, making it apparent that deficient motive power has much to do with the situation. The shortage of cars in conjunction with a somewhat heavier demand has stimulated prices.

LOGAN AND THACKER

While the Logan region is suffering from a shortage of loading equipment many of the mines are able to continue operation since much coal is being stored. Increased demand in some quarters meant nothing to producers since they had no transportation facilities with which to increase shipments.

Mines in the Kenova-Thacker region are producing on a somewhat larger scale owing to a better car supply on the N. & W., yet the transportation facilities on that road preclude loadings in excess of 50 per cent of potential capacity.

NORTHEASTERN KENTUCKY

A slight improvement in the car supply does not permit the mines to produce more than 30 per cent or somewhat in excess of 110,000 tons a week. Indeed, the output hardly more than suffices producers to take care of standing orders. Retailers are actively in the market so that domestic is in prime demand.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

That part of the New River region dependent upon the C. & O. for a car supply is having an extremely limited output owing to inability to secure cars. Mines have been reduced to about one day's work a week so that as the year came to an end production was on a smaller scale than it had been at any time during that period, and when the demand was larger than it had been for some time, owing to increased consumption at Tidewater and in Inland East markets. Not only a scarcity of cars but deficient motive power were factors in retarding production.

The Virginian is able to furnish Gulf mines a somewhat better car supply and to get cars back to the mines more promptly since virtually all the coal is being shipped to Tidewater and Eastern markets. Gulf mines are producing at the rate of about 35 per cent of potential capacity.

POCAHONTAS AND TUG RIVER

The advent of the holiday season found the Pocahontas region producing more coal than during the earlier part of December, output being not far short of 300,000 tons a week. The greater part of the coal is for Eastern delivery, though Western movement has been increased to a small extent. Western shipments are limited owing to the small amount of equipment coming from the West and also owing to the limited ability of the N. & W. to handle coal destined west.

Much difficulty is experienced in getting Tug River coal through to Western markets. Then, too, there are not so many cars coming from Western connections. There is little spot coal available.

Coke

BUFFALO

Coke has about given out. The shortage is said to be on account of the poor car supply and as that is not improving now the coke consumer will have to wait. A little of it can be used to advantage with some fine anthracite, but so can soft coal in lumps, so the supply of substitutes is not cut off yet.

CONNELLSVILLE

Demand for coke for domestic distribution has continued, but there has not been much turnover in the market as the previous buying had absorbed all floating supplies. A new development is a bulge in demand for domestic coke from the West.

The demand, if it promised to continue merely for a few weeks, would justify the blowing in of many additional ovens, but operators in the main are quite indisposed to put on more ovens, being very doubtful as to car supply, while there is the fresh complication that sending so many cars east with coke, when the same cars were previously engaged in making short round trips to blast furnaces, may operate to decrease the total of car placements.

As high as $9.50 has been paid for coke for domestic distribution. Some operators have willingly sold at this price, while others are disposed to take care of the regular furnace trade, which cannot afford to pay any such price. It is understood that some first-quarter contracts have been made at $7@$7.50 as an accommodation to furnaces.

The *Courier* reports production during the week ended Dec. 23 at 123,810 tons by the furnace ovens, and 80,720 tons by the merchant ovens, a total of 204,530 tons, a decrease of 4,080 tons.

UNIONTOWN

Continued celebration of Christmas holidays as "wet" and bloody as any during pre-prohibition days cut sharply into the production of the Connellsville coal and coke region during last week. The restricted production came at a time when the coke market especially is very active and a firm demand also arising for coal, principally from railroad interests.

The coke situation at the closing of the year is without parallel in the trade. At a time when some blast furnaces were attempting to negotiate contracts to extend for the first three months of 1923 there suddenly appeared in the market an entirely new buyer for Connellsville coke, originating from the shortage of anthracite. Production was just being about sufficient to supply the demands of blast furnaces in operation and active price debate has ensued, with the custom coal interests leading the way. Some blast furnace interests have intimated that unless lower prices become available they will be forced to bank or blow out.

With the exception of inquiries for railroad fuel there is no concerted buying movement for bituminous coal. Scattered sales are made at $3@$3.25 for steam and $3.50@$4 for byproduct.

News Items From Field and Trade

ARKANSAS

The sale of the property of the **Arkansas Anthracite Coal Co.** near **Fort Smith** has been postponed to March 23.

COLORADO

Rumor has it that No. 3 mine of the **Big Creek Coal Co.**, near Kirksville, is to shut down indefinitely.

A. T. Hawkyard, P. J. Nusbaum, S. Blixt and others have incorporated **The Hub Coal Mining Co.**, of **Montrose**; capital, $50,000.

CONNECTICUT

Vincent Brothers Co., coal dealers, Bridgeport, recently increased their capital stock from $50,000 to $100,000.

ILLINOIS

Officers of the Central Illinois Coal Operators' Association have been elected as follows: President, H. C. Adams, Chicago (re-elected); George Soloman, Springfield, vice-president; R. I. Wilcoxson, Springfield, secretary-treasurer; Dan Clark, Springfield, commissioner. The following members were elected to the executive board: W. H. Leland, Chicago; D. A. Watson, Springfield; A. J. Moorshead, Chicago; C. W. Argest, Taylorville, and Forrest File, Decatur.

James Higgins, Chillicothe, has leased the Oscar Carlson farm, two miles south of Mineral, and has begun mining operations. This is another new mine for Bureau County.

The Bucyrus Co., South Milwaukee, Wis., announces the addition to its sales force of **John J. Gault**. Mr. Gault has had many years' experience as construction and locating engineer, having been assistant engineer on the Chicago & Northwestern, engineer maintenance of way on the Chicago & Alton, construction engineer for the United Fruit Co., and assistant engineer on the Chicago, Milwaukee & St. Paul. His last connection was with the International Harvester Co. as locating engineer on a railroad project. He will be attached to the Chicago office of the Bucyrus Co.

The Quartermaster Supply Officer at Chicago has called for **bids for coal supplies** as follows: For use at Columbus Barracks, Ohio, 4,700 tons run-of-mine, 1,300 tons over 2-in. screen; for use at Erie, Pa., 550 tons slack, 200 tons over 2 in.; for use at Fort Benjamin Harrison, Ind., 3,000 tons over 2 in., 500 tons run-of-mine; for use at Dayton, Ohio, 3,000 tons run-of-mine; for use at Fort Thomas, Ky., 1,200 tons over 2 in., 500 tons run-of-mine; for use at Jefferson Barracks, Mo., 5,000 tons over 2 in.; for use at Rock Island, Ill., 358 tons over 2 in.; for use at Selfridge, Mich., 1,000 tons over 2 in., 278 tons run-of-mine; for use at Fort Crook, Neb., 1,300 tons over 2 in.; for use at Des Moines, Iowa, 1,200 tons over 2 in.; for use at Omaha, Neb., 150 tons over 2 in.; for use at Fort Riley, Kan., 4,400 tons over 2 in., 626 tons run-of-mine; for use at Fort Robinson, Neb, 300 tons over 2 in. Bids will be opened at Chicago, Jan. 16.

The Willis Coal & Mining Co., of St. Louis, has given orders to **close down its mine at Willisville**, known as the "old mine," and all machinery, equipment, track, etc., will be immediately taken out of the mine. The order was made by Krause Bros., of St. Louis, large stockholders in the company. The mine is one of the oldest mines in that end of the state and for years has supplied large contracts to the Mobile & Ohio R.R., on which road it is located and by which it is served. The mine employed about 200 men.

The finishing touches are now being made on the **new three-story brick and concrete office building of the O'Gara Coal Co.** at Harrisburg. On the third floor of the building is a large and spacious assembly and reception hall to be used for social events. There also are two private bedrooms on this floor equipped with private bath and telephones to be used by officials of the company from Chicago, who are frequently in Harrisburg.

S. H. Wright, of the Chicago office of the Chicago, Wilmington & Franklin Coal Co., has returned after spending a short visit at the company's mines near Herrin.

James Forester, superintendent of the Paradise Coal Co., Du Quoin, recently spent several days on business with his firm in Chicago.

Edwin L. King has been appointed district sales manager of the **Reading Steel Casting Co., Inc.**, with headquarters in Chicago. He succeeds M. L. Chase, who resigned.

An accident at No. 11 mine of the Old Ben Coal Corporation at Christopher, Dec. 19, sent nineteen men to a hospital. The cage got out of control and dropped with twenty men to the bottom. One man jumped to safety just before the cage hit the bottom, the others sustained broken bones and internal injuries. The company immediately sent out a call to surrounding towns for doctors and other medical assistance. A special train was sent over the C. B. & Q. Railroad to the mine to take the injured to the Harrell Hospital, Christopher.

A. S. Austin, Sr., and A. S. Austin, Jr., both of Milwaukee, Wis., were in Du Quoin recently preparing to **open the Kanawha Fuel Co. mine there.** The company is headed by the former, while the younger Austin is superintendent of the mine. The pumps have again been started and coal will be hoisted just as soon as possible. The company operates under the name of the Old Abe Mining Co., DuQuoin, with the sales offices as Kanawha Fuel Co., Milwaukee, Wis.

A. W. Dix, of Buda, and Edward Otis, of Sheffield, have **purchased the Rollins mine**, three miles west of Sheffield. The property consists of 40 surface acres and 30 acres of virgin coal with buildings and mining equipment. This mine has been in operation for several years and during the last two years has been operated by Lamb and Pollack. About half of the coal is consumed locally, the balance being shipped. The property is now operated by C. M. Mapes and two associates. Mr. Mapes had charge of this mine during the war when it was owned at Spring Valley, Ill. There is a 4½-ft. vein of coal at a depth of about 60 ft. The roof is considered first class and the water problem has not bothered since the first year the mine was operated.

The Grant Coal Co., Pekin, has been incorporated with capital of $25,000. The incorporators are T. W. Karstedt, Hugh Kelly, Walter Grant, Fred Hebhardt, William Grant, Jr., David Grant and Albert Hoff.

The Bishop Hamlin Coal Co., Chicago, has been incorporated with capital of $50,000 and 1,000 shares of no par value, to deal in coal, coke, wood, oil and other fuels. The incorporators are J. Edward Bishop, Fred T. Hamlin and Francis H. Uriell.

The Shuler Coal Co. expects to begin shipping coal from the new mine south of Alpha about Jan. 15. The shaft is 225 ft. deep. The company's new office building is finished, the excavation for the track scales is complete, the truck and wagon scales have been installed and grading for the switch from the main line of the Burlington is done. The machine shop is nearly ready.

John Burpaugh, of Peoria, and associates plan the development of a coal field covering 3,000 acres in the southern part of Knox County, about 20 miles south of Galesburg. The field itself extends southeast from the new Burlington Lake to a point near DeLong. It is said that this field is underlaid with a 5-ft. vein of coal within 100 ft. of the surface. Coal tests are now being made. What is known as vein No. 2 of the Illinois series is a surface vein in that section of Knox County and has been mined by stripping. It is thought that at a depth of 100 ft. the Illinois vein No. 1 would be reached. In some parts of Illinois this coal is being mined extensively and the coal is of good quality.

The Tovey Mine No. 8, near Taylorville, broke all records for hoisting coal when 4,750 tons were raised on a recent day just before Christmas. The men at the mine say that they have an ambition to hoist 5,000 tons in one day.

INDIANA

Latest reports from local unions in Indiana assure the retention in office of the present officers and members of the executive board of District No. 11, United Mine Workers. The incumbents were running from two to three to one ahead of their competitors.

Francisco Mine No. 2, at Princeton, was struck because the men, who are being paid by the day, wish the company to pay according to tonnage. To do this it would be necessary for the company to put in scales. A representative of the company said that until the mine is completed and the tipple erected, the company does not wish to put in scales, which would be expensive and would have to be changed later. He said the mine had been operating day and night shifts, that a steel tipple, which would cost approximately $75,000, was ready for shipment to the mine, but in view of the strike it was probable the company would let the mine remain idle until April and send the contracts for coal elsewhere.

Among the measures to be supported by the **Indiana Retail Coal Merchants' Association** at the next session of the Legislature will be one to prevent unscrupulous dealers from misrepresenting the kinds and grades of coal they sell to consumers. It also is understood that the association will favor a larger appropriation for the state weights and measures department. J. H. Panabaker, of Kokomo, is president of the association; W. A. Dalton, of Gary, is first vice-president; Ray Macey, of Indianapolis, second vice-president; George E. Bruner, of Kokomo, treasurer, and R. R. Yeagley, of Indianapolis, secretary. The legislative committee is composed of Mr. Macey, Fred D. Stilz and C. F. Meyer, Jr., of Indianapolis; C. D. Cook, of Columbus, and C. C. Cochran, of Atlanta.

The Archer Coal Co. has been organized in Fort Wayne to deal in fuels of all kinds. The company has a capital stock of $10,000 and the organizers are L. H. Dunten, John Cashman and John Dehner, all of Fort Wayne.

Illegal shots were given as the **cause of an explosion** in December, in the **No. 8 mine of the J. K. Dering Coal Co.** near Clinton which killed William Davis, a shotfirer, at work near the shaft. The cages were damaged some by the force of the blast, but production was resumed after three days. This is an old mine, the shaft of which has been sunk to the No. 3 vein. Development in that seam is just well started and the mine's output is about 300 tons a day.

IOWA

M. F. Riordon, of Melrose, has been elected **president of the Gold Goose Coal & Mining Co.**, of Albia, to fill the vacancy caused by the death of L. T. Richmond.

The Sioux City Coal Exchange is trying to work out a method of licensing retail dealers so as to eliminate "snow birds" and dealers who cannot prove they are substantial.

The **Norwood-White Coal Co.** is getting coal from its new mine recently opened up at Herrold. This is a small producer and is electrically equipped. It is understood that additional operations are contemplated.

J. L. Hartstorn, Knoxville, has leased forty acres of coal land on the Elias Stierwald farm, one mile north of Flagler and now has about 50 ft. of entryway driven back into the vein which averages about 6 ft. in thickness. The location of the mine is near the Knoxville and Pella Road and the coal is equal to that found south of Knoxville, where the Andersonville and Pershing mines are in operation.

KANSAS

Large leases of strip coal land near Chetopa have been made by R. L. Hillegas to the **Cherokee Coal & Coke Co.**, of Kansas City. Deep shaft mining is possible on part of the tract.

Charging that miners working in the **Kansas State Prison mines have been removing coal from under his farm, John McCarthy**, a farmer living near Lansing, filed suit Dec. 20, 1922, against the board of directors of the prison, and M. F. Amrine, warden, for $6,000. Pending settlement of the suit, McCarthy obtained a temporary restraining order to prevent the removal of props and pillars from the tunnels he alleges are under his land, thus permitting cave-ins to obliterate signs of any operations.

At a dinner following a state first aid tournament at Girard, in December, **Ira Clemens** called attention to the fact that **since Oct. 1 there have been no strikes** in the southeastern Kansas coal district. Before this year the average was twenty-seven and one-half a month, he said. Mr. Clemens said that approximately **8,000 tons of coal is displaced each day by oil** in the district supplied by the Kansas field. He attributed the situation to public distrust of the ability of the mines to deliver because of past strikes and the threat of another strike April 1, and to high freight rates on Kansas coal. Mr. Clemens assured the miners that the use of mining machines would increase Kansas production without decreasing the number of men employed. First prize in the first-aid contest was won by a team composed of miners from various mines in the vicinity of Mulberry. Seventeen teams were entered.

KENTUCKY

The retail coal trade of the state along with all truck owners, farmers and trucking interests, has started a movement **to enjoin the state from enforcement of the Bright light load law**, which prohibits use of certain surfaced roads from Dec. 15 to April 15 except with specified weights and tire widths, which, it is asserted, prevents larger trucks from operating except with very limited loads. This, they say, would result in overloading of small trucks and more damage to roads.

A. C. Lackey, of Nashville, Tenn., and H. H. McBratney, of Louisville, Ky., president and vice-president of the **Dixie Fuel Co.**, jobbers with offices at Nashville, Louisville and Chicago, **have just closed a deal for the Phoenix Coal Co.**, a 35- to 40-car a day mine at Drakesboro, on the Owensboro & Nashville division of the L. & N. The name of the Phoenix company will be changed to the Phoenix Coal Mining Co., with A. C. Lackey as president and H. H. McBratney as secretary-treasurer. The Dixie Fuel Co. will be sales agents. The same interests own the Douglas Coal Mining Co., which was the White Coal Mining Co. prior to last August. Former owners of the Phoenix Coal Co. were James B. Torbert, P. D. Houston and Wilbur Nelson.

MARYLAND

Acting on the appeal of twelve striking miners from the decision of Justice John R. Workman, of Frostburg, who ordered them to vacate houses owned by the Consolidation Coal Co., Judge Albert A. Doud affirmed the action of the magistrate and **directed the issuance of a writ of restitution** of Sheriff Peter McFarland to restore possession of the premises to the Consolidation company and to assess the costs to the defendants. The houses are located at Eckhart, Zihlman and Hoffman. The tenants are strikers who refused to work and in most instances are back in their rent, being nominal amounts of from $2 to $3 a month. The company wants possession of the houses for men who desire to work in the mines.

MASSACHUSETTS

The Sanford Riley Stoker Co., of Worcester, has acquired the business of the **Ground Coal Engineering Co.**, of Chicago, which was incorporated in Massachusetts Dec. 23 as the Ground Coal Engineering Corporation, with headquarters in Worcester. R. Sanford Riley, of Worcester, is the president of the new corporation; Milton W. Arrowood, of Chicago, is vice-president; F. H. Daniels, of Worcester, treasurer, and David K. Beach, of Worcester, clerk. The company has a capital of $200,000 preferred stock and 1,000 shares of common stock of no par value.

MINNESOTA

C. P. White, Federal Fuel Distributor for the Northwest, closed his office in St. Paul, Dec. 30, and returned to Washington.

MISSOURI

Dickinson Bros., of Kansas City, are preparing to mine coal on a large scale at their new pit at Eve.

D. C. Crane, of Springfield, has opened up a strip mine near Creighton.

With the opening of the **Perry-Rice Coal Co.** mine at Rayville there is a boom on. There is an acute housing shortage developing as the coal tonnage increases.

In the last sixty days of 1922 upward of **15 new coal mining companies** were either opening or arranging to open that many new coal mines. Most of these are strip mines, but there are several small shafts. Tonnage from all of these mines will be small on account of the 3-ft. vein. These mines are to be opened because of the high prices of Kansas and Illinois coals. If this increase in Missouri coal continues a great part of the state will be able to get along without Kansas or Illinois fuels. Rapid strides have been made in this direction during the last year. Nearly all these new openings are non-union.

The Bonanza Coal Co. has changed its name to the Higginsville Coal Mining Co. with Nelson B. Good, of Kansas City, and H. C. Odel, of Potter, as principals; capital $15,000.

The new mine of the **Mosby Coal Co.**, near Mosby, is now hoisting coal. The J. E. Drysdale Coal Co., of Davenport, Iowa, has leases on 3,000 acres and is making test holes.

Coal-lease speculation is rife since the Gose & Austin Mining Co. hit a 3-ft. seam of good soft coal at 140 ft. near Spickard, with prospects of a 6-ft. seam 50 ft. further down.

NEW YORK

The Timken Roller Bearing Service & Sales Co. began operation Jan. 1, 1923. This new company adds the final link to the chain of complete control which the Timken Roller Bearing Co. exercises over its product from the raw material to the sale and maintenance of the finished bearing. Thirty-two direct factory branches are maintained.

The recapitalization plan of Burns Bros. has been formally approved by the directors. Under the new plan, by the retirement of the preferred and preference stock, there will be a saving from disbursements annually sufficient to give present stockholders a larger dividend, without taking any larger amount from current earnings. Earnings of Burns Bros. at present are of a very satisfactory character and arrangements were made to provide for additional stock, which may be distributed to stockholders as a stock dividend, when conditions warrant. Provisions also were made for further expansion.

A reorganization of the general manufacturing department of the General Electric Co. took place Jan. 1, 1923. H. F. T. Erben, heretofore manager of the Schenectady Works, becomes vice-chairman of the manufacturing committee and ranking a member of the general manufacturing staff. Charles E. Eveleth, who has been serving since September 1st as assistant works manager under Mr. Erben, is to succeed Mr. Erben as manager of the Schenectady plant. Mr. Eveleth will become works manager. J. A. Smith will continue as general superintendent and in the absence of Mr. Eveleth will be in charge of the works. The membership of the manufacturing committee and the appointment of a subcommittee to be known as a committee on appropriations, is also announced. The general manufacturing department will be as follows: H. F. T. Erben, vice-chairman of manufacturing committee and ranking member of the staff; J. T. Broderick, secretary of the manufacturing committee; L. G. Banker, general purchasing agent; M. C. Fitzgerald, manager of transportation department; W. C. Fish, manufacturing engineer; W. B. Curtiss, supervisor of production; G. S. Maxwell, supervisor of costs; E. Z. Steezer, supervisor of industrial relations.

The Rochester & Pittsburgh Coal & Iron Co., of Buffalo, is again operating its Walston mine in Jefferson County, Pa., which had been idle for some years. With a force of 40 miners, which is in prospect soon, the output will come up to about 200 tons a day.

The Lake season closed with the loss of only about 1,200 tons of coal in the upper Lakes' trade, which amount was jettisoned from the Buffalo steamer, J. J. H. Brown, lately ashore on Bois Blanc Island, in Lake Huron, near the Straits of Mackinaw. No vessels of account were lost and the loss of freight was merely small amounts from a certain small number of cargoes. This is a record breaker all around.

OHIO

Roy Heyser has accepted the position of manager of the Cincinnati office of the **Morrow Callahan Coal Co.** Mr. Heyser has resigned his position with the Semet-Solvay Co. to take on this new work. He has been located in Cincinnati for several years as fuel purchasing agent for Semet-Solvay and prior to that was with Eaton Rhodes.

Lee Hall has been re-elected president, **William Roy** vice-president, and **G. W. Savage**, secretary, of the Ohio division of the United Mine Workers of America.

All records of the Pennsylvania coal docks at Sandusky were surpassed during the navigation season just closed. During the 1922 season the Toledo division of the Pennsylvania system handled into Sandusky and dumped into lake vessels 2,246,800 tons of coal, or more than 49.5 per cent of the total amount of coal handled at Lake Erie ports by the Pennsylvania R.R. Of this amount 265,807 tons represented cargo coal, while the remainder was bunker coal. The volume of cargo coal dumped by the system at Sandusky represented approximately 41.1 per cent of the total amount of lake coal handled, or more than the combined total dumpings of Cleveland, Ashtabula and Erie, points under the jurisdiction of the central region.

OKLAHOMA

The **Red Oak Coal Co.** has been incorporated for $200,000 by Ray Morgan, James Hilling and V. Davis.

With the new acreage acquired around Edna by the **Central Coal & Coke Co.** it is estimated that close to **$175,000 has been spent in this field** for coal leases in the past six months. In the territory west of Welch, the leases are going to local Oklahoma coal operators.

PENNSYLVANIA

Alberto Benturini, a coal operator of Allegheny township, Westmoreland County, was recently awarded a verdict of $4,408 in Federal District Court over A. N. Johnson, cashier of the First National Bank of Freeport, as **compensation for alleged breach of agreement** in connection with a large coal transaction. Benturini, who sued for $75,000 damages, charged that in May, 1918, he agreed to sell the output of his mine to Johnson, but that numerous deductions from the selling price caused him to lose heavily.

The Eastern Fuel Co., with main offices in the Frick Building, Pittsburgh, has opened offices in the Heymann Building, Philadelphia, temporarily in charge of C. W. Stone, of the Pittsburgh office. James F. Whelan has been promoted to the position of resident manager of the New York office, Frank W. Morton, formerly with the Underhill Coal Co. and the Tuttle Corporation, has joined the sales force of the main office.

Under the provisions of a lease, executed Sept. 29 last, and filed Dec. 26, the **Fair Coal Co. agrees to pay a royalty of $1 a ton** for all coal mined from a forty-seven acre tract in the Second Ward of Scranton, which for years has been known as the P. C. Griffin tract. Included in the lease are three separate tracts, known as the Dean, Winton and Livey tracts.

The Glen Alden Coal Co. has declared its first dividend since the company was organized a year ago. The dividend amounts to $1.50 for each share of stock. The Glen Alden Company was formed when the coal and railroad interests of the Delaware, Lackawanna & Western were separated.

State charters were issued recently to the following companies mining bituminous coal in Pennsylvania: **The Fire Coal Co.**, Dunlevy, with a capital stock of $5,000. J. H. Dunlevy, Pittsburgh, is treasurer, and the purpose of the corporation is mining, shipping, buying and selling coal and other minerals. The incorporators are Thomas T. Dunlevy, Pittsburgh; Etta N. Dunlevy, Dunlevy. **Morningstar-Schnars Coal Co.**, Philipsburg; capital, $12,000; S. Reed Morningstar, Philipsburg, treasurer, and an incorporator, the other incorporators being R. R. Schnars, Hawk Run, and H. Dixon, Hawk Run. Purpose: Mining, buying and selling coal and the products thereof. **Beadling Coal & Coke Co.**, Pittsburgh; $5,000; W. A. Beadling, Pittsburgh (treasurer); James Beadling, Beaver Falls, and William H. Beadling, Pittsburgh, are the incorporators. **White Oak Coal Mining Co.**, Johnstown; $50,000; Gordon C. Hutchison, Johnstown, treasurer. The treasurer, Thomas B. Allen, Nanty-Glo, and Toner S. Yoder Nanty-Glo are incorporators The purpose of the company is mining, selling and shipping coal and other minerals and the manufacture of coke and byproducts.

The Mid Valley Coal, Upper Lehigh Coal, Maryland Coal, Raven Run Colliery, Gerardville Mining and **Lykens Valley Coal companies**, all properties of the Wentz interests of Philadelphia, have been consolidated under the name of the Hazelbrook Coal Co., with a capital of $7,000,000. An official said the object of the merger was to facilitate management.

The Bertha Coal Co., Pittsburgh, is receiving bids for new shaker screen machinery and equipment which the company plans to install and have in operation by next April at the Bertha Mine, Dinsmore, Pa., on the Pan Handle; the Louise Mine, Louise, W. Va., on the Pittsburgh & West Virginia Ry.; the Gould Mine, Wilson, on the Pennsylvania R.R., and Rachel Mine, Downs, W. Va., on the B. & O. The new equipment will include loading booms and picking tables of the most modern type.

The Commission for the Reorganization of the State Government has sent a summary of legislation proposed, as the result of a year's study of the needs of the Commonwealth, to members of the 1923 Legislature. Among the proposals is one that **would combine the two mine inspectors' examination boards** into one board. The commission's summary contains the following paragraph: "Under the present law there are two mine inspectors' examining boards appointed by the Governor, one board for the examination of inspectors in the bituminous region and one for the examination of inspectors in the anthracite region. Under this system the mine inspectors seem entirely free from co-operation with the Department of Mines. The bill submitted provides for the consolidation of these two boards into one board composed of eight citizens to be appointed by the chief of the Department of Mines. The chief of the department is also an ex-officio member, giving the board nine members. By providing for the appointment in this manner and making the chief of the department a member of the board, it is believed that these inspectors will be tied up with the department more closely and strengthen the executive authority of that department."

SOUTH CAROLINA

The Pee Dee Coal Co. has been incorporated at Florence, and has elected the following officers: President-treasurer, E. K. Turner; vice-president-secretary, G. H. Turner.

TENNESSEE

The Independent Fuel Co. has been incorporated at Nashville by S. R. Hampton, C. B. Roberts and Cecil B. Simms.

UTAH

Announcement has been made by Wiggington E. Creed of final organization of a $20,000,000 corporation known as the **Columbia Steel Corporation**, to consolidate the plants of the Columbia Steel Co. in Pittsburg, Cal., and Portland, Ore., and the Utah Coal & Coke Co., of Utah. Construction of a large blast furnace between Provo and Springville, Utah, is promised in the near future. The plan of the company is to process steel on the Pacific Coast in as great an amount as possible, to save water and rail tariffs on this product from the East. Mr. Creed is president of the corporation.

About 250 acres of coal land in Carbon County **has been redeemed** from the delinquent tax sale in 1917 **by the Carbon Fuel Co.** The company paid to the state treasurer $6,812.62, representing the amount of the tax and the delinquent penalties and costs.

A. D. Pierson, formerly with the Utah Fuel Co., has been appointed railroad fuel agent for the U. S. Fuel Co., Salt Lake City. Mr. Pierson is regarded as one of the best informed coal men in the state.

VIRGINIA

Clyde Smith has leased coal mine properties at Pulaski, and will develop them at once.

The Richmond Coal Mining Co., of Richmond, has been incorporated for $25,000 with Sterling R. Jones as president and Sam Marcus as secretary.

The Jewell Ridge Coal Corporation, of Tazewell, has announced that it will increase its capital to $500,000.

WEST VIRGINIA

Manufacture of smokeless powder is to be undertaken on a large scale by the Main Island Creek Coal Co. Tests conducted at the Omar mines of the company have been so satisfactory that the company will build a powder plant at Omar. At the outset the company will manufacture powder only for use in its own mines, but after a time will place it in the general market.

The Ramona Coal Co., with a capital of $100,000, has been incorporated at Huntington by C. T. Egri, M. R. Tetman and E. M. Jones.

The Elkins Smokeless Coal Co., of Elkins, has been incorporated with a capital stock of $750,000. The incorporators are C. A. Parvin, of Chicago, and J. F. Bridwell and C. E. Williamson, both of Charleston.

Facilities for handling coal for river shipment on a large scale are to be provided by the **Philadelphia & Cleveland Coal Co.** at Huntington, through the erection of a large river tipple, the company having acquired 23 acres for the plant. It will be necessary to construct about 2,000 ft. of trackage from the C. & O. siding at the Camp Glass plant to the river tipple. The cost will be approximately $1,000,000. This will enable the company to handle twice as much coal as any other equipment in Huntington, but the company does not propose to restrict the use of the equipment to its own coal, having indicated that other coal companies would be permitted to use the tipple in loading coal for river shipment if they so desire.

In the case of the **Milligan Coal Co. vs. the Harvey Fork Coal Co.**, of Clay, tried in the Circuit Court of Kanawha County, Judge A. P. Hudson handed down a decision in favor of the plaintiff. The defendant admitted it was to purchase certain property of the plaintiff in Clay County for the sum of $85,000 but that there was to be no money passed at the time the defendant entered upon the possession of the property as a part of the agreement. The plaintiff in the case put forth the claim that the defendant had paid nothing for the property and had taken possession for the purpose of getting the property in shape to operate, but had failed to complete its part of the contract.

Certificates of increase in capital stock have been filed by the **MacAlpin Coal Co.** The company's stock is to be increased from 4,000 shares with par of $100 to 8,000 shares at the same value.

Teddy Arunski, Pennsylvania miner, has been found guilty by a jury of conspiring to incite striking miners to attack the Clifton Coal Co. plant during the strike last July in the Clintonville field.

The Vanbail Coal Co. has changed its general headquarters from Huntington to Charleston.

The Morgart Coal & Coke Co. and the **Carbon Hill Collieries Co.** have been dissolved as corporations and have surrendered their charters.

The Mandt Mining Co. has changed its name to the **Elrod Fuel Co.**

Foreign coal corporations recently authorized to do business in West Virginia include the **Blue Ridge Mountain Coal & Coke Co.**, of which Joseph Washington, of Cresson, Pa., is secretary; the **Barbour-O'Brien Coal Corporation**, of Delaware, of which Joseph Washington is also secretary, and the **Stevens Coal Co.**, incorporated under the laws of Delaware with offices on the North Side in Pittsburgh, Pa.

The Central Coal Mining Co., of Wheeling, is reported to have acquired 800 acres of coal land that lies close to its present properties at Wheeling. The present output of the company is 1,000 bushels of coal a week and it contemplates developing its new properties until this output is pushed to 2,000 bushels a week.

A jury in the criminal court of Harrison County found **three women guilty of participation in a riot** June 23 at Glady's Stop, in Harrison County, when a number of deputy sheriffs and non-union miners on their way to the Lewis mine of the Hudson Coal Co. were attacked by a mob of strikers. The jury recommended mercy. The defendants were Mrs. Daisy Simonetti, Mrs. Angelina Bassil and Mrs. Angelina Modo, the first named being the mother of Larry Simonetti, also convicted on the same charge at the same term of court. Before the trial of the three defendants began, their counsel moved for a change of venue, but the motion was denied by the court.

The Bell Creek By-Products Co. has been incorporated at Montgomery by J. E. Wilkinson, G. C. Humphreys and W. H. Thomas, with a capitalization of $50,000.

Engineers have been engaged by the **Slaters Creek Coal Co.**, of Charleston, to make surveys for large development of coal lands near that city.

F. S. Landstreet, Jr., M. F. Breslin and Herman Redd have incorporated the **Eldes Junior Coal Co.**, at Huntington, W. Va., with a capital stock of $100,000.

The Midland Smokeless Coal Co., which was recently incorporated at Ronceverte with a capital stock of $50,000, has perfected an organization with the election of the following officers: President, C. H. Thompson; vice-president, L. E. McClung; secretary-manager, B. M. Higginbotham. The company will soon install the necessary mining machinery to develop 800 acres of coal mining land.

Progress is being made by the **C. & O. in determining upon the best route into the Greenbrier County coal field**, surveyors now being at work in this territory with a view to definitely settling the question of the best method of reaching the large mines which have been opened in Greenbrier County within the last year. Although the junction point with the main line has not been decided upon, it seems to be generally accepted that the branch into the Greenbrier field will be started at Ronceverte, in which event it will become necessary to increase yard and shop facilities in order to take care of the increased traffic.

The Chafin-Jones-Heatherman Coal Co., operating in the Logan field, has not only been able to reach the production goal set ten months ago, when this company opened its mine, but this concern is planning now to double the capacity of its mines on Peach Creek. The company completed work on its tipple and finished driving several openings in the Alma seam on Feb. 1 of the present year, announcing at that time that it expected to reach a production of 1,000 tons per day. Since beginning operations the new company has extended its track up Peach Creek for nearly a mile and has made additional openings. Foundations have been built for another tipple and arrangements are being made to construct a 610 ft. conveyor from the tipple to the headhouse. The company began business with 41 miners' houses, to which have been added 25, and it is now proposed to build 50 more houses in the near future. Officers of the company are Don Chafin, president; W. T. Jones, vice president; Dr. K. J. Heatherman, general manager.

WISCONSIN

The State Fuel Administrators of Wisconsin, Minnesota, North Dakota and South Dakota wired C. E. Spens Dec. 19 urging priority order for shipment of 250 cars of anthracite daily to those states via ferry line routes to prevent suffering in the Northwest.

The Arpin Process Coke Co., of Wisconsin Rapids has been chartered, with these shareholders: J. P. Arpin, Charlotte C. Arpin and Paul H. Arpin.

CANADA

Frank T. Malone, formerly with the Century Coal & Coke Co., Ltd., Toronto, has severed his connection with that firm and **has organized the International Coal Co.**, with office on Bay Street, Toronto. The company will engage in the wholesale coal business.

Property Commissioner Chisholm, who is the new Fuel Controller in Toronto, is to put into immediate effect a regulation that every citizen must take **25 per cent of substitutes with hard coal.** It is believed that later on the proportion will be 50-50.

So bitterly is the United Mine Workers conducting the **strike in the northern Alberta field** that the **James Mulock**, Dominion Minister of Labor, has sent the following **telegram to Robert Livett**, one of the board of the union, who is conducting the strike in the field: "I shall lose no opportunity in condemning the strike as unlawful, and, so far as I can see, unjustifiable, since it appears to have no other purpose than securing a closed shop, an object that menaces alike the freedom of the individual and the welfare of the community. If you and those associated with you persist in maintaining the present situation, I shall most certainly hope to assist in framing some changed method or law that will prevent a recurrence of such an attitude on the part of those assuming to represent labor." There have been a number of outrages in the Edmonton coal field, including stoning and firing at men attempting to go to work in the mines. A number of officials of the union have been arrested and fined, and in one instance a jail sentence was given. The provincial police have been reinforced.

Alfred Odgers, a fireboss, and **Gilbert McBroon**, a pumpman, in the employ of the Western Fuel Co., were killed recently by an explosion of coal dust in the Wakesiah mine, Nanaimo, B. C.

One man is missing and property damage to an extent estimated at $300,000 as the result of a fire which destroyed the power house of the International Coal & Coke Co. at Coleman, Alta.

Nearly 400 coal mines were in active operation in Canada in 1921, working over an area of 713,000 acres, according to a report issued by the Dominion Bureau of Statistics. Approximately 30,000 men were given employment and the wage bill in 1921 amounted to $42,758,471. The total capital invested in the industry at the close of that year was $176,991,495.

Five new coal mines have been opened up along the Canadian Pacific Railway line from Acme to Drumheller. The coal mined is said to be of excellent quality for domestic use and is expected to aid considerably in relieving any coal shortage this winter.

WASHINGTON, D. C.

Coal or coal products imported from Canada, Spain, Japan and several other countries must pay a customs duty equal to the amount of duty such countries or dependencies impose upon coal and coal products from the United States, according to orders issued by the Treasury Department. This action was taken because of the retaliatory proviso of the coal paragraph of the new tariff act, which admits coal free of duty unless other countries impose a duty on coal from this country. The foreign tariffs on coal which are to be the basis of the countervailing duties to be collected on any coal from such countries imported into the United States, according to the Treasury decision, are:

Australia—Coke, 6s. per ton; coal, free.

British India—Coal, coke and patent fuels, 0.5 rupees per ton.

Canada—Anthracite, free; bituminous slack, such as will pass through a ¾-in. screen, 14c. per ton; bituminous round and run-of-mine, 53c. per ton.

Japan—Coal, free; coke, 5.65 yen per 10,000 kin (kin equals 1⅓ lb.); brick coal or briquets, 10 per cent ad valorem.

French Indo-China—Coal and coke, briquets, etc., 0.12 fr. per 1,000 kilos.

China—Coal 0.27 Haikwan taels per ton, coal briquets, 0.50 Haikwan taels per ton.

Brazil—Coal imported by undertakings manufacturing and supplying gas, 6.814 actual milrois per metric ton; imported by any other private firm or individual, 12.342 milrois; coke, free.

Chile—Coal and coke free; briquets, 3 gold pesos per ton.

Peru—Coal free; coke, 0.20 soles per 100 kilos, plus surtaxes if imported at certain ports.

Spain—Coal, coke, etc., 7.50 pesetas per metric ton.

Uruguay—Coal, 0.05 gold pesos per metric ton.

Duties are to be figured on conversion at current rates of exchange at the time of importation.

Reports to the U. S. Bureau of Mines from manufacturers representing about 90 per cent of the explosives industry in the United States show that **sales during October of black powder and permissibles were slightly below the September record, but sales of dynamite and other high explosives increased somewhat over the previous month.** The reports for October indicate total sales of 793,105 kegs of black powder, 4,692,060 lb. of permissibles, and 18,139,118 lb. of other high explosives. The total amount of explosives manufactured and used in the United States (excluding exports) during the first ten months of 1922 was as follows: Black blasting powder, 4,725,343 kegs; high explosives other than permissibles, 148,515,562 lb.; permissible explosives, 29,788,377 lb. These totals compare with 4,416,848 kegs of black blasting powder in the corresponding months of 1921 and 8,362,994 kegs in the same months of 1920; 129,097,684 lb. of high explosives other than permissibles in the first ten months of 1921 and 185,437,738 in the corresponding period of 1920; 30,564,538 lb. of permissibles in the first ten months of 1921 and 45,116,720 lb. in the same period of 1920. Distribution by uses during the first ten months of 1922 was as follows:

JANUARY TO OCTOBER, 1922

	Black Blasting Powder, Kegs	High Explosives Other Than Permissibles, Lb.	Permissible Explosives, Lb.
Quantity used for:			
Coal mining.....	3,964,443	16,084,987	27,084,559
Other mining....	143,355	58,736,437	1,345,900
Railway and other construction work.....	244,547	18,156,936	118,862
All other purposes	372,998	55,537,202	1,239,056
Total, first 10 mos., 1922...	4,725,343	148,515,562	29,788,377

Traffic News

Rates on coal from Dines, Wyo., to numerous Western points are held to be unreasonable in a tentative report submitted by Interstate Commerce Commission Examiner T. J. Butler. The rates were attacked by the Colony Coal Co.

Complaints have been filed with the I. C. C. alleging that present carrier rates from Lake Michigan docks and from Illinois fields in shipments of coal in carload lots to Wisconsin and Lake Superior points are unjust and unduly prejudicial to Illinois shippers and that the rates to Michigan destinations are unduly preferential to Lake Michigan dock operators. The complaints place the coal rate situation in such a shape that it will be necessary for the I. C. C. to conduct a general investigation of rates on this commodity in the western trunk line territory.

The Illinois Commerce Commission has issued an order directing the Peoria and Pekin Union Railroad Company and the Peoria Railway Terminal Company **to reduce the cost of hauling coal into Peoria by 24c. a ton.** This will effect a saving of $50,000 a year to the people of Peoria. This saving will be effected on actual hauling rates alone. Should it mean that the city will now be able to purchase, through lower rates, coal from their own nearby mines, it will mean a far larger saving. The Peoria Association of Commerce has been active on this reduction for several years. The association is particularly anxious to see local coal used, as much of the coal is now hauled from distant mines. It is believed that the reduction of freight rates on coal transported by the Peoria local terminal railroads will result in more Peoria coal being used in the city.

Obituary

William Stephan, Sr., president of the Stephan Coal Co., of St. Louis, died suddenly on a street car on his way to his office. Heart disease was the cause of his death. Mr. Stephan, who was 67 years old, was born in Germany and at the age of 19 settled in St. Louis, where he had made his home since. He recently returned from a trip abroad with Mrs. Stephan, at that time visiting the scenes of his childhood. He is survived by the widow and two sons, William Stephan, Jr., recently elected president of the Retail Credit Men's Association of St. Louis, and Oscar H. Stephan, both of whom were associated with him in the coal business.

Don H. Bacon, formerly president of the Tennessee Coal & Iron Co., died at his home in St. Augustine, Fla., on Sunday, Dec. 17. He had been ill for about a year. Mr. Bacon had been president of the Minnesota Iron Co. before the United States Steel Corporation was organized.

Dwight R. Higbee, a well known retail coal dealer of Minneapolis, head of the Northern Fuel Co., died at his home Christmas night without warning. He had celebrated the day, and had driven with his family around the city. They returned home, and he complained of not feeling well. Death followed soon after. He had been a resident of the city since 1882.

Publications Received

The Preparation, Transportation and Combustion of Powdered Coal by John Blizzard, Mines Branch, Department of Mines, Ottawa, Canada. Pp. 131; 6x9 in.; illustrated. Describes plants where powdered coal is being used and gives some interesting tests and costs.

Analyses of Kentucky Coals. Bureau of Mines, Washington, D. C. Technical paper 308. Pp. 92; 6x9 in.; tables.

Fusibility of Ash from Coals of the United States, by W. A. Selvig and A. C. Fieldner. Bureau of Mines, Washington, D. C. Bulletin 209. Pp. 119; 6x9 in.; illustrated. Contains tables giving softening temperatures of coal ash from coals of the United States.

Value of Coke, Anthracite and Bituminous Coal for Generating Steam in a Low-Pressure Cast-Iron Boiler, by John Blizzard, James Neil and F. C. Houghton, Bureau of Mines, Washington, D. C. Technical paper 303. Pp. 56; 6x9 in.; illustrated.

Lessons from the Granite Mountain Shaft Fire, Butte, by Daniel Harrington, Bureau of Mines, Washington, D. C. Bulletin 188. Pp. 50; 6x9 in.; illustrated. Describes rescue work at time of mine fire in 1917.

A Study of Explosions of Gaseous Mixtures, by A. P. Kratz and C. Z. Rosecrans. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 133. Pp. 104; 6x9 in.; illustrated. Contains tests on study of the physical phenomena involved in the explosions of various mixtures of illuminating gas and air, including determination of the effect of differently shaped explosion vessels and of turbulence at time of ignition, as well as a study of the heat loss from the burning mass of gas. The bulletin also contains an historical review of the principal researches made in the study of explosions of gaseous mixtures.

Coal-Dust Explosion Tests in the Experimental Mine, 1913 to 1918, Inclusive, by George S. Rice, L. M. Jones, W. L. Egy and H. P. Greenwald. Bureau of Mines, Washington, D. C. Bulletin 167. Pp. 639; 6x9 in.; illustrated.

A Study of Coal Mine Haulage in Illinois, by H. H. Stoek, J. R. Fleming and A. J. Hoskin. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 132. Pp. 136; 6x9 in.; illustrated. Describes evolution of mine haulage and the progress in mine-haulage equipment. Also gives detailed accounts of mine-haulage problems in Illinois, including the handling of cars on shaft bottom, main-line and gathering haulage, underground haulage costs, haulage accidents and accident prevention measures.

Trade Literature

W. A. Jones Foundry & Machine Co., Chicago, Ill., has now ready for distribution its catalog No. 26 on spur-gear speed reducers. This catalog contains technical and practical information, complete descriptive matter and illustrations of typical drives. Dimensions, weights and horsepower ratings for complete speed reduction sets are shown.

Portable Electric Tools and Shop Equipment. The Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. Catalog No. 5. Describes the advantages of design and construction of their portable electric drills, electric screwdriver and socket wrench, post and drill stands, attachments for portable electric drills, electric grinders. Two pages are devoted to telling how to grind drill bits, and the five remaining pages describe their No. 2 lectrofilter electric compressor. The book contains 30 pp., is 8 x 11 in. and well illustrated.

Railway Supplies. General Electric Co., Schenectady, N. Y. Catalog 6002. Pp. 505; 8x10 in.; illustrated. Mine locomotives, railway and mine haulage motors, controllers, resistors, switches, protecting devices for mine equipment, trolleys for mine locomotives, incandescent headlights for mine locomotives, cables, rail bonding, clamping ears for mines, are among some of the mining equipment described. The book is indexed for ready reference and is accompanied by a price supplement for estimating purposes only, being subject to change without notice.

Roberts & Schaefer Co., Chicago, Ill., have issued a four-page folder illustrating and describing their **"Perfection" Cone Stove Sand Dryer and Beamer Patent Steam Sand Dryer.** Bulletin 48.

Coming Meetings

American Engineering Council will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place, Washington, D. C.

Northeast Kentucky Coal Association will hold its annual meeting Jan. 23, 1923, at the Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 19-22, 1923, at the Engineering Societies Building, New York City. Secretary, F. F. Sharpless, New York City.

Engineers' Society of Western Pennsylvania will hold its annual banquet Monday evening, Jan. 22, 1923, at Pittsburgh, Pa. Secretary, K. F. Treschow, Pittsburgh, Pa.

Hazard Coal Operators' Exchange will meet on Jan. 12, 1923, at the Phoenix Hotel, Lexington, Ky. Secretary, R. A. Hord, Lexington, Ky.